Philosophical Research on Mary Shepherd (1999-2005)

Jennifer McRobert

1. **Mary Shepherd and the Causal Relation, Part Two (2003),** book manuscript, last saved December 31, 2003

2. **Mary Shepherd's Two Senses of Necessary Connection (2002),** CPA paper, last saved December 20, 2002

3. **Mary Shepherd and the University (2002),** book manuscript, last saved May 30, 2002

4. **Mary Shepherd's Refutation of Idealism (1999),** CPA paper, last saved October 1999

The book manuscript **Mary Shepherd and the University (2002),** included below, was in the process of being split into two works, **Mary Shepherd and the Causal Relation, Part One and Part Two (2003)** and **How Hume Became a Sceptic (2005)**, when I left academia in 2005.

Mary Shepherd and the University (2002) was converted from an older Word Perfect format and contains bad characters.

The text of **Mary Shepherd and the Causal Relation, Part Two (2003)** is disjointed in places. Material was roughly situated in 2003, when the manuscript was set aside for future revision.

The papers **Mary Shepherd's Refutation of Idealism (1999)** and **Mary Shepherd's Two Senses of Necessary Connection (2002)** were read at Canadian Philosophical Association meetings sometime between 1999 and 2003.

There are too many errors, typos, formatting challenges &c. to fully address (at this time). A list of the most glaring textual errors will be forthcoming at a later date. In the meantime, the material is posted here for the benefit of interested historians, philosophers & others.

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Synopsis

Mary Shepherd and the University -- **Jennifer McRobert**

Mary Shepherd's life and work are bound together with the issues of academic freedom and the university. Theoretical and practical questions ranging from ideas on causality and theism to political moderatism and university reform draw the attention of Mary Shepherd and her contemporaries. The cluster of subtle and complex issues facing those living in eighteenth and nineteenth century Britain, and the strategies adopted to bring about university reform, provide insights for contemporary readers.

Book 1: Philosophy and Fealty

Chapter 1: The Scottish Origins of Mary Primrose

1.1 The Primrose Ancestry
Mary Shepherd is born Mary Primrose on 31 December 1777. The daughter of an Earl, she is raised on a country estate near Edinburgh during the Scottish Enlightenment. Mary Primrose was very much a product of her family traditions and Scottish heritage, and the circumstances of the Primrose family's rise to prominence help to define her outlook.

1.2 Scholasticism and the Curriculum
Following the turn of the eighteenth century, the political scene in Edinburgh is dominated by a Presbyterian-Whig alliance. The political dynamic is evident in records relating to Edinburgh University. Faculty and Town Council dispute the status of Edinburgh's professors and discuss matters relating to the curriculum. The old Regency system is abandoned. Professors are recruited on the basis of specialization and merit. Updates to the scholastic curriculum include the study of Bacon, Newton, and Locke.

1.3 Hume and the Limits of Moderation
In the mid-eighteenth century, amidst Jacobite unrest, David Hume applies for the Chair in Moral Philosophy at Edinburgh University. As author of a treatise that challenges the foundation for belief in the existence of God, Hume is accused of atheism. For most of Edinburgh's establishment, this accusation presents an open-and-shut case against his candidature. Though there is growing support for moderatism, the bounds of tolerance cannot be made to stretch to a perceived case of atheism. The political and intellectual controversy in the Hume affair is insubstantial; yet, over the decades, there is continued interest in Hume and his philosophy.

1.4 A Childhood in Dalmeny
Mary Primrose enjoys a rather idyllic childhood in the countryside near Edinburgh, after a pattern prescribed and romanticized by writers such as Locke and Rousseau. She is one of a fortunate minority of Scottish girls to receive instruction from a 'Dominie'; one Mr. Pillans. Her education includes subjects considered crucial for higher learning, such as Latin, mathematics, and philosophy. As Mary Primrose's youth comes to a close, there is a growing sense of conservatism in Edinburgh. This conservatism is bolstered by fears of social unrest -- a possibility made vivid by the French Revolution. In sounding the alarm, the finger of blame is pointed at the moderate leadership and the ideological defense of liberty and tolerance.

Chapter 2: The Town and Gown Politics of John Leslie

2.1 Dangerous Philosophy

Shepherd's first book, *An Essay upon the Relation of Cause and Effect,* published anonymously in 1824, is best understood in connection with the 1805 election of John Leslie to a Chair at Edinburgh University. The controversy around Leslie's appointment echoes the earlier controversy regarding the appointment sought by Hume. Given the unanimous censure of Hume, there had been little need to vet the charges against him in any sort of debate; it was apparent to all that Hume's dangerous philosophy of 'heresy, deism, scepticism and atheism' would have to be quashed. In the long run, both Hume's doctrine and the issues around academic freedom and religious tests receive a public hearing. This hearing, which ensues long after Hume has been laid to rest, is initiated by the Leslie episode.

2.2 Metaphysical Footnotes

The question of whether Leslie's endorsement of Hume requires the exercise of the Minister's *avisamentum* regarding university appointments becomes a matter of controversy. Leslie's remarks are worrisome to the pious, but many feel that the proceedings against him are unfair. The Leslie affair becomes the subject of considerable ridicule. As part of the public discussion, there is frequent jibing about the significance of footnotes in scholarship. Numerous texts reserve serious discussion for footnotes, or claim that the serious discussion had been moved from footnotes, or that an important point will follow in the footnotes, and so on. Though the Leslie affair did reach comic proportions, the underlying issues were far from superficial. On a more solemn note, Professor John Playfair expressed regret for the underlying social dimension. Playfair sums up his concerns in a moving plea for academic freedom.

2.3 Edinburgh Debates the Causal Relation

Hume's arguments cast serious doubt on our capacity to arrive at certain knowledge of causal relations and undermine traditional proofs for the existence of God. By 1805, Edinburgh's literary community has had ample opportunity to read and reflect upon his work. The philosophical community in Edinburgh is also aware of Kant's interest in Hume. The conceptual issues underlying the charges against Leslie come to hold considerable interest in Edinburgh, and the Leslie affair takes on the character of a public debate. Leading scholars in Scotland's universities, including Dugald Stewart and Thomas Brown, take up the defence of Hume and Leslie, arguing that Hume's philosophy does not in fact lead to atheism. In the debate, empiricism triumphs over scholasticism.

2.4 Brown's *Observations* and Shepherd's Reply

Having engaged the subject of Hume's philosophy in a series of youthful 'metaphysical disquisitions', Mary Primrose is convinced that Hume's doctrine does in fact lead to atheism. Philosophically, her ambition is to advance a theory of ideas that can defeat the sceptical arguments of Hume. She appeals to reason's introspective discovery of the causal relation, and claims that the causal relation is a condition of representation. Her specific target in the Edinburgh debate is Thomas Brown's 1805 *Observations on the Nature and Tendency of the Doctrine of Mr Hume concerning the Relation of Cause and Effect*. Her strategy in responding to Brown fills a gap in the Leslie affair noticed by David Brewster -- the debate had ignored the *a priori* defense of the causal relation.

Chapter 3: The Causal Relation

3.1 Spurious Connections: Leslie, Malthus, and Common Law

There is a gap of nearly twenty years between the Edinburgh controversy of 1805 and the publication of the 1824 treatise. In 1808, Mary Primrose marries a barrister named Henry John Shepherd, after which she becomes known under her married name of Lady Mary Shepherd.

Henry John Shepherd is the son of Sir Samuel Shepherd, a prominent member of the British legal profession. Prior to the marriage, in 1807, William Kerr publishes *A Summons of Wakening*, a text that mixes together methodological criticisms and personal attacks. In one breath, Kerr claims that scientific experimentalism is a dangerous and 'heterogeneous mixture of truth, falsehood, and speculative opinions'. In another, he likens Leslie to the Devil and Malthus to Paine. Kerr proposes that laws be introduced to limit the press. Kerr's text provides important clues to the wider social context in which the response to Hume is best understood.

3.2 Brown's *Inquiry* and Whately's *Historic Doubts*

In 1818 and 1819, respectively, Brown and Whately publish on the subject of causality. These publications stand in contrast to the 1824 contribution of Mary Shepherd. Brown's 1818 work develops his 1805 analysis. Brown's view is that causal beliefs arise immediately from sensations in conscious experience. He argues that we are subject to feelings that lead irresistibly and intuitively to belief in an external world --feelings that compel us to form beliefs about external causes. Shepherd rejects Brown's empiricism, which she takes to be an invitation to scepticism. In an altogether different approach, Whately's *Historic Doubts Relative to Napoleon Buonaparte* runs together the image of the Humean sceptic and the Napoleonist in an amusing and socially telling way. Whately's strategy is to shift the burden of doubt onto the sceptic. Shepherd objects to the purely deductive approach in Whately, which is insufficient to quell the sceptical worry raised by Hume.

3.3 The Trials of Carlile and Leslie

Mary Shepherd's life is once again filled with the same controversy, persecution, and party politics that prompted the Leslie affair in 1805. Circumstances conspire to place her father-in-law at the center of the 1819 prosecution of Richard Carlile for the publication of Paine's *Age of Reason*. Following the trial, Sir Samuel Shepherd resigns his position as King's Advocate and becomes Exchequer for Scotland. The story leads us back to Edinburgh and to another *Summons* -- the summons of William Blackwood for publishing slanders against John Leslie. It turns out that the Carlile and Leslie trials bear circumstantial and social connections dating back to the days of the original Leslie controversy.

3.4 The Causal Relation Reconsidered

Attention to the nature of scientific reasoning is required for an adequate response to Hume's scepticism. Shepherd's full response to Hume is founded on an alternative account of how the causal relation is first discovered and then justified as an objective, *a priori* feature of representation. Shepherd proposes an experimentalism based on a two-step method. The first step, which leads to the discovery of causal relations, is inductive. The second step, which involves the justification of causal necessity, is deductive. The discussion and debate surrounding causality and induction in Shepherd's circle influences the direction of the 1824 treatise.

Book 2: Education and Reform

Chapter 4: Mary Shepherd's Salon: Science and Society

4.1 Shepherd's Circle of Literati, Scientists and Publishers

Many of the Shepherds' friends were interested in reform. Shepherd frequently entertained members of the legal community, aristocrats, publishers, and a considerable number of so-called 'Benthamites' and philosophical radicals. An important influence on Mary Shepherd's thought appears to derive from the political economists in her circle. Shepherd's connections to individuals such as David Ricardo shed light not only on her personal and political convictions, but also on the systematic approach in the development of her philosophy.

4.2 Kant and the Philosophical Radicals
James Mill and David Ricardo help to rekindle the British interest in Kant. Mill argues that a deduction from fixed principles governing human nature provides the basis for a science of government. This is an approach that critics, such as Macaulay, deride. David Ricardo is similarly criticized for his adherence to Say's Law and for his abstract approach in political economy. Like Mill, Ricardo, and others, Shepherd is influenced by the ideal of a systematic philosophy advanced by thinkers such as Kant.

4.3 Causality and the Unity of Knowledge
Shepherd's theory of representation bears affinities to Kant's. Shepherd's view is that in the act of representation, the mind brings together sensations of sensible qualities and sensations of ideas of cause and effect, forming compound objects. Shepherd holds that there are *a posteriori* and *a priori* elements in representation and argues that knowledge is inferred from marks of objectivity and necessity in representation. The concept of causality is central in Shepherd's philosophy and is the foundation for systematic unity in her thought. Shepherd's views on causality and subsumption show an appreciation for the sense in which Kant views *a priori* features of representation as criteria for truth and necessity in empirical knowledge

4.4 Systematic Philosophy and the 1827 *Essays*
For those involved in the second wave of interest in Kant, the criteria of adequacy for scientific theories include subsumption under causal laws. In Shepherd's 1827 *Essays,* it becomes apparent that the causal axiom serves as a fundamental subsumptive law. The view of scientific theories held by Shepherd and members of her circle is examined.

Chapter 5: The *Camera Obscura* and the Difference Engine

5.1 Empiricism and the *Camera Obscura*
Shepherd appeals to the metaphor of the *camera obscura* to describe the relation between processes in the mind, representations, and the external world. In 1801, Villers had used the metaphor of the *camera obscura* to explain the sense of inference in Kant's transcendental philosophy. Thomas Brown and other empiricists had rejected the metaphor, charging that the *camera obscura* would never be able to draw inferences. Shepherd resurrects the metaphor in 1832, revealing a fundamental sympathy with transcendentalism.

5.2 The Difference Engine and 'Modified Berkeleian Theory'
In the 1830s, Shepherd takes an interest in the inference-drawing capacity of Babbage's Difference Engine. Just as the Difference Engine calculates tables of data using rules, so too might human beings infer objective knowledge using rules. Shepherd explains her theory of representation by analogy to algebraic signs. 'Now the causes of our ideas', she writes, 'may be considered as simple algebraic quantities', such that in the determination of causes on the mind, their effects may 'be considered as their *squares*'.

5.3 The Logic of Induction and Confirmation
There are a number of important contributions to the physical and social sciences during the first half of the nineteenth century. New views on the logic of induction begin to emerge, and Shepherd's work contributes to these developments.

5.4 On Necessary Connection: A Philosophical Answer to Hume
Shepherd's answer to Hume on necessary connection is a philosophical one, and it helps to advance the intellectual debate on science and scientific reasoning. Shepherd proposes two senses of necessary connection. In one sense, necessary connection is discovered through the use of the causal axiom and its role in our coming to have law-like representations. In another sense, necessary connection is discovered from the evidence of metaphysical necessity in

representations of external existence. Taken together, Shepherd attempts to defend a non-circular account of knowledge based on an argument from empiricism to realism.

Chapter 6: On the Causes of University Reform

6.1 The New University and the *Via Media*
Many of Shepherd's friends were university, church, and government officials interested in institutional reform. The group that helps to establish London's University College includes several Scots well-known to Mary Shepherd. The new university places emphasis on the science curriculum, 'with deliberate exclusion of theological studies or religious affiliation'. The approach is both novel and controversial, but it sets a new standard for freedom of conscience and free speech in the universities. Despite this, liberal ideas on education are slow to take a hold in the older, established universities. Richard Whately initially welcomes the theological liberalism of the Oxford movement, but when the movement degenerates into destructive party politics, he leaves his position at Oxford. What began in Edinburgh as a 'roasting of Scotch atheists' turned southward in the form of controversy over religion and the curriculum at London, Cambridge, and Oxford.

6.2 Science, Technology, and Liberal Education
Shepherd is religiously inclined, but optimistic that there exists harmony between faith and reason. Shepherd and her circle take an interest in both theoretical and practical aspects of science. Whewell casts aspersion on the value of recent scientific research, arguing that new sciences should be gradually introduced into the university curriculum in order to allow plenty of time for an evaluation of their merits. Babbage disagrees with Whewell's assessment, and claims that the government has hindered the progress of science by failing to assist in the development of science, technology, and industry.

6.2 University Reform: New College and Edinburgh
As the mid-nineteenth century approaches, little has been done to address the matter of religious oaths in Edinburgh. Those unable or unwilling to swear to the Confession of Faith are still ruled out as candidates for positions at the University. In 1843, Thomas Chalmers founds Edinburgh's New College for the purpose of educating Ministers of the newly formed 'Free Kirk'. New College symbolically achieves a new beginning at Edinburgh. By the mid-1840s, the University Senate begins in earnest to discuss the restriction of religious tests to those involved with the professional training of students in Theology. James Pillans, Professor of Humanities and descendant of Mary Shepherd's tutor, promotes academic freedom at the University.

6.4 Mary Shepherd and Scottish Philosophy
Mary Shepherd's philosophical work is best understood in light of Scottish philosophy and the empiricist response to Hume. Shepherd and others propose new ideas on causality and induction and advance debates in both science and philosophy. With new ideas of causality and induction in hand, John Stuart Mill, William Hamilton, William Whewell, William George Ward, Alexander Campbell Fraser, and others resume the debate around causality and theism. The new proofs for theism are of limited value, since the arguments turn out to be just as controversial as their forerunners. There are, on the other hand, lasting advances made in philosophy of science, where the new ideas on causality and induction contribute in important ways to the discussion and development of ideas on scientific reasoning and theory. Shepherd's contributions to thought on causality and induction are part of a complex reaction to Hume's philosophy, one that is ultimately tied to both ideological and social change in Britain.

Introduction

Mary Shepherd was born Mary Primrose on 31 December 1777. The daughter of an Earl, she grew up on an estate near Edinburgh during the Scottish Enlightenment. Her life and work unfold in three distinct threads; biographical, historical, and philosophical. The first of these threads, the biographical one, traces Shepherd's life and development through various family and social circles in Scotland and England, and offers significant clues to her personal and political outlook.
The second, historical thread relates to the educational reform movement in Britain -- and to university reform in particular. As Mary Shepherd and her circle move geographically between northern and southern parts of Britain, engaging and initiating important events in the history of university reform, there emerges a definite context and chronology for interpreting her life and work. These biographical and historical details unfold and combine to reveal ongoing interests in the university, in philosophy, and in academic freedom -- a pattern of interests that ultimately brings continuity and coherence to Mary Shepherd's life and work. Yet, it is the third and philosophical thread that most clearly speaks to Mary Shepherd's inner life. This thread follows Shepherd's arguments for knowledge of causality and the external world, showing how Shepherd aims to close a gap between scepticism and science by appeal to standards of reason and evidence. As the three distinct threads of the narrative are woven together, it becomes apparent that Mary Shepherd applies the standards of reason and evidence equally to personal, political, and philosophical matters. In the end, there is both coherence and significance to a life and philosophy built upon the foundations of the Enlightenment.

The second half of the eighteenth century was a period of relative stability and prosperity for Edinburgh's upper classes. In many respects, Mary Shepherd seems to have enjoyed an idyllic childhood. Born a Primrose, her family was settled in a small thirteenth century castle on an estate outside of Edinburgh. The nobility scattered through the 'numerous towns, villages, seats, [and] woody hills' nearby, were enjoying a period of political stability under a firmly aligned Presbyterian-Whig government.[i] Like other children living in manorial country homes, Mary Shepherd benefited from the cultural activities and freedoms associated with country living. At the same time, town life, with its more demanding standards of decorum and accomplishment, was never distant; for the Primrose family was well connected in the fashionable and literary circles of Edinburgh and London. Enlightenment ideals prevailed quite generally in the area, and education was an obviously priority. This was especially so in the Primrose household, where the girls and boys each had a tutor. The girls' tutor, a man named Pillans, 'taught the girls Latin, for the basis of language, Geography, Mathematics, History' and 'a vast deal of thinking upon the elements of Truth as to things in general.'[ii] Pillans encouraged his pupils to specialise according to interest and ability, and Mary Shepherd's interests turned to philosophy. Between the ages of 17 and 27, she wrote numerous philosophical manuscripts 'full of metaphysical disquisitions, exposing errors in the reasoning of Hume's atheistical treatises, and the unitarian doctrine of the then new philosopher, Priestley'.[iii] In fact, a literary culture emerged among the five Primrose siblings, who 'managed to live a very sociable brother and sister life together, with a good deal of love for books, talk, country roaming... [and who] used to write each other long letters like essays, and reply punctually.'[iv] The love of literary culture would never cease for Mary Shepherd, who, in adulthood, continued to pursue philosophy, developing analyses on topics such as causality, induction, external existence, theism, and so on.

On the surface, Mary Shepherd was simply one of among many members of the Scottish nobility who flourished within Edinburgh's Enlightenment culture. That she did so as a woman

gives her life special interest. However, at a deeper level, her story takes on complexity and significance, and shed new light on history. Shepherd was very much a product of her family traditions and Scottish heritage, so that the circumstances of the Primrose family's rise to prominence help to define the ideological boundary of her political outlook. This boundary broadly encompasses various forms of what we might think of as political liberalism, but what would then have been designated by the term 'moderatism'. Indeed, the family's rise to prominence during the seventeenth century is marked by her ancestors' service to King James VI, whose later reign was marked by attempts to smooth over differences between Scotland's two main religious groups -- Presbyterians and Episcopalians. Although these and other the seventeenth century efforts to cultivate moderatism seem to have failed, the outlook had improved by the eighteenth century, when a conciliatory group of leaders in Edinburgh -- including members of the Primrose family -- developed a firm alliance based on political compromise. This group succeeded in building a form of moderatism that would influence the religious, political, and intellectual culture of Scotland. In consequence, the second half of the eighteenth century, the period in which Mary Shepherd enjoyed a rather idyllic childhood in the countryside near Edinburgh after a pattern prescribed and romanticised by writers such as Locke, was one of relative peace and stability. Even so, religious conflict and social unrest in Scotland was never far beneath the surface, and as the eighteenth century drew to a close, the new and fragile sense of security that had accompanied the Scottish Enlightenment came under threat. The youth of Mary Shepherd ends amidst a sense of rising panic and a growing conservatism, bolstered by fears of social unrest -- a possibility made vivid by the American and French Revolutions. Mary Shepherd, born and raised in the security of political moderatism and enlightenment ideals, witnessed a resurgence of a persecuting spirit that had only just been quelled. This spirit -- fed by fear, conflict, and intolerance -- had for centuries cursed the progress of Scotland and its people. The relative peace and prosperity that had begun to flourish in Edinburgh was threatened. Those with most to lose, the moderates of the Presbyterian-Whig alliance took a stand in support of tolerance and moderation. Those with most to gain, conservative leaders who had lost power under the Presbyterian-Whig alliance played on people's fears of social instability. In sounding the alarm of social unrest, the finger of blame was pointed at the moderate leadership and their ideological cries for liberty. In an important sense, it is these events, events that mark the rise and fall of moderatism in eighteenth century Edinburgh, which define the edges of the world from which Mary Shepherd and her thought emerged.

Mary Shepherd's adult life and interests are further revealed through the people and events that connect her personal story with the history of university reform in Britain. This history is bound up with stories of persecutions, appeals for moderation, and conceptual debates. Shepherd's first book, *An Essay upon the Relation of Cause and Effect,* published anonymously in 1824, is best understood in connection with a specific episode in the history of Edinburgh, an episode that began in 1805 and concerned the election of John Leslie to a chair at Edinburgh University.[v] The controversy around Leslie's appointment echoed an earlier controversy dating back to 1744, a controversy regarding an appointment sought by David Hume. In 1744, David Hume had put forward his candidacy for the Chair of Moral Philosophy at the University of Edinburgh. As author of a treatise that was considered to have challenged the rational foundation for belief in the existence of God, Hume had been accused of atheism. The accusation of atheism against Hume presented, for most of Edinburgh's establishment -- few of whom could lay claim to having read and understood Hume's recently published work -- an open-and-shut case against Hume's candidature. Given the unanimous censure of the religious community, there was little need to vet the philosophical and theological charges in any sort of debate; it was apparent to all that Hume's dangerous philosophy of 'heresy, deism, scepticism and atheism' would have to be quashed.[vi] For though there was growing support for freedom of conscience and religious

tolerance, the bounds of that tolerance could not easily be made to stretch to a perceived case of atheism, which was what most of Edinburgh's leaders were prepared to charge against Hume. In the long run, both Hume's doctrine and the issues that they raised around academic freedom would in fact receive a public hearing. That hearing, which ensued decades after Hume had been laid to rest, occurred as part of the Leslie episode.

The vacancy for which Leslie had put forward his candidacy in 1805 was for a Mathematical Chair; however, Leslie had somewhere written a footnote endorsing Hume's doctrine of causation, a subject anathematized by the Ministers of Edinburgh:

> ...Mr Leslie, having, along with Mr Hume, denied all such necessary connection between cause and effect, as implies an operating principle in the cause, has, of course, laid a foundation for rejecting all argument that is derived from the works of God, to prove either his being or attributes.[vii]

The main tactic of the Ministers was to charge that Leslie's footnote, since it endorsed Hume's view of causality, was an open endorsement of atheism. And, Hume's empiricist analysis of causal inference, it should be remarked, did in fact seem to question the very foundations of theology as understood on the scholastic tradition. This tradition had prevailed throughout Europe prior to the advent of empiricist theories of knowledge, and invoked causal reasoning in support of theism, for instance, in cosmological arguments intended to show that God, as the first cause in the universe, must exist. Hume analysis of causality, however, had shown that we have no rational justification for our expectation that the future will resemble the past, and so led to a general scepticism about casual knowledge, a scepticism that extended to causal proofs of God's existence. Hume notices that we are unable to form a belief in a cause and effect connection after having seen just one instance. Nor are actual causal relations are not known by demonstrative proof or analysis. He thinks that the evidence suggests that causal inference is based on a habit of mind, a habit developed by repeated experiences of resembling cases. If so, Hume reasons, then any justification that we could offer for causal knowledge would be circular.

That is, knowledge of a causal relation such as 'The sensible effect of sunlight is caused by the Sun.' seems to depend upon our having knowledge of matters of fact such as 'The sun is a yellow globe in the sky.' At the same time, knowledge of matters of fact such as 'The sun is a yellow globe in the sky.' also depends on our knowledge of the causal relation invoked in the claim that 'The sensible effect of sunlight is caused by the sun.' What this means is that knowledge of matters of fact must depend on causal reasoning; and, knowledge of causal relations must depend on knowledge of matters of fact. So, on Hume's account, the senses enable us to perceive the constant conjunction of events; but we are unable to provide an argument to show that there are necessary connections between causes and effects 'out there' in the world. Hume’s subjectivist conclusion is that the idea of necessary connection is a subjective fiction ascribed by the mind when it perceives a constant conjunction of sensible qualities. To many of those versed in philosophy, and particularly in scholastic theology, Hume's arguments concerning causality cast serious doubt on our capacity to arrive at certain knowledge of causal relations. This in turn undermined traditional proofs for the existence of God.

By 1805, many in Edinburgh had had ample opportunity to read and reflect upon Hume's work, although the significance of his work was by no means universally agreed upon. Mary Shepherd, however, had already engaged the subject of Hume's philosophy in her youthful metaphysical disquisitions, and she was convinced that his doctrine led to atheism. But the question of whether Hume's atheistic doctrine, and Leslie's endorsement of it, required the

exercise of the Minister's *avisamentum* regarding university appointments, was a matter of controversy in its own right. The Professors of the University of Edinburgh questioned this right, and several ministers expressed concerns about its 'proper extent'.[viii] The attack on Leslie was, according to Dr Hunter, Professor of Divinity, personally devastating. 'He was represented, in the church courts, and even in the public newspapers, as hostile to religion, and as an abettor of atheism, and as having carried the sceptical tenets of Hume further than Hume himself.'[ix] Those ministers most vocal in their opposition to Leslie were charged by Dugald Stewart, Professor of Moral Philosophy, with exhibiting 'an unbecoming zeal' unworthy of *genuine moderation* and as 'tending to persecution'.[x] Following the leadership of Stewart, members of Faculty and other moderate leaders in Edinburgh stood behind Leslie's right to academic freedom -- while also arguing that Hume's philosophy did *not* lead in any inevitably way to atheism. In taking this stance, Stewart seemed to represent the voice of reasonableness and tolerance in the face of the Ministers' cries of infidelity. In fact, like most empiricist philosophers in Britain, Stewart was working within a post-scholastic, empiricist tradition. Empiricists working in this tradition, including deeply religious ones, were prepared to swallow the bitter aftertaste of Hume's critique of causality, and to begin the task of building a new philosophy and theology from an empirical foundation. In fact, Hume's analysis had not only influenced the empiricists in Britain, it had quite generally influenced the direction of European philosophy, and those at the forefront of scholarship were very much engaged in responding to Hume's critique. So, by the nineteenth century, the philosophical issues at the base of the charges against Leslie were of some considerable interest in Edinburgh, and the Leslie affair took on the character of a public philosophical debate. Leading scholars in Scotland's universities, including figures such as Dugald Stewart and Thomas Brown, took up the defence of Hume and Leslie, arguing that Hume's philosophy did not in fact lead to atheism.

In defending Hume, Stewart's strategy was to attempt to distinguish two senses of causation, the one physical, and the other metaphysical. Stewart maintained that only in the latter sense could there be talk of necessity. Since Leslie's citation of Hume concerned a matter relating to physics, the applicable sense of the term was the physical one, the sort of case in which, as Francis Bacon and other respected empiricists had shown, there could be talk of contingency, but not of necessity. Stewart's view, the view that a limitation expressed by inserting the word 'physical' before the word ‘cause' would have been sufficient to dismiss the charge of atheism, was endorsed by Leslie and the professors and students who agitated in his defence against the Ministers' objections. Indeed, the general sentiment regarding the outcome of the debate was in fact in favour of Stewart's analysis. As one observer remarked, 'It was on all hands admitted, that if Mr Leslie had, by a single word, limited his observations to *Physical* causes, they, in that case, would have been wholly free from objection'.

Thomas Brown, Stewart's student, assistant, and successor in the Chair of Moral Philosophy, also addressed Hume's philosophy on this occasion. Like most of his contemporaries, Brown accepts the empiricist theory of ideas. He takes it as an obvious point that causality is not discovered in the mind *a priori,* and holds that belief in causality is based on an analogy from observed conjunctions to the idea of invisible causes or powers. Moreover, Brown agrees with Hume's view that the relation of cause and effect is not discovered by analysis since 'future and invariable antecedents and sequences' are neither discernible in nor implied by what is given in experience. Brown's original contribution relates to his interpretation of Hume. Brown defends Hume by claiming that when Hume asserts that the relation of cause and effect is an object of *belief*, what he really means that it is an object of *faith*. For, the first proposition shows that the causal relation cannot be *perceived*, and the second proposition shows, the causal relation cannot be *inferred*, so the only remaining sense of 'belief' is in the sense of 'having faith'. As such, Brown claims, for Hume, the causal relation is believed as an object of *faith*. Brown then

interprets what this might mean, saying that '...as soon as we *believe* the relation of cause and effect, the idea of power arises. The belief, indeed, is "instinctive" but the ideas that follow do so regardless of the origin of this belief.'[xi] So, in the end, Brown argues, Hume *does* provide a foundation for cause and effect, but that the foundation is based on instinct rather than reason, so that 'we *believe*, rather than *discover*, the relation of cause and effect.'[xii] Thus, on Brown's interpretation of Hume, it is but a short journey from 'belief' in causality to theism.

Unfortunately, the defenses mounted by Stewart and Brown in support of Hume, while well intended, suffer from the general tendency of Scottish philosophers to misunderstand Hume. Stewart bases his defense of Hume on a spurious distinction between physical and metaphysical senses of causality -- one that Hume himself would surely have rejected. Brown rises to Hume's defense by arguing that causality is founded on an irrational kind of intuition or faith -- on something well beyond the purview of either the senses or reason -- also an interpretation that Hume would not have endorsed. In a sense, Stewart and Brown's analyses are cover-ups; rather than engaging Hume's critique, they do Hume's analysis a sort of violence. As Kant had earlier pointed out in his *Prolegomena*, Reid, Oswald, Beattie, and Priestly had also missed Hume's point. That is, they took for granted that which Hume had doubted, and doubted that which it had never occurred to Hume to doubt:

> It was not the question, whether the conception of cause be right, useful and, relatively to the whole cognition of nature indispensable, for of these Hume never harboured a doubt; but whether it be thought *a priori* by reason, and in this manner have an internal truth independent upon all experience: on this head Hume expected information and, as he himself says, still kept his mind open to instruction, if any would vouchsafe to bestow it on him.[xiii]

The significance of the *a priori* question concerning causality was not missed by Shepherd, who saw the faults in both Stewart's and Brown's analyses. Against Brown, Shepherd aims to show that reason, not faith, leads to the discovery of necessary connection. Shepherd argues that the 'manner and action' of causation is such that ideas of cause and effect are included in representations 'in the very moment of their formation'. It would appear, in fact, that what Shepherd intends to advance is a line of argument that combines *a posteriori* reasoning about the mind's contents with an *a priori* sense of causal necessity. In doing so, she rejects Hume's main claims regarding causality, by claiming that an empirical act of introspection does lead the mind to the discovery of a necessary connection, and that this necessary connection is thought *a priori* by reason. What Shepherd argues is that the *determination* of anything noticed by the mind -- of anything that 'begins to exist' -- requires the inclusion of the general idea of a cause in our representations. It follows that any attempt to *think* 'dependent qualities that begin to exist' as *uncaused* leads to contradiction.[xiv] In consequence, Shepherd maintains, ‘when the mind perceives by what passes within itself, that no quality, idea, or being whatever, can *begin* its own existence, it...perceives the general necessity of a cause for every effect’.[xv] Thus, introspection and analysis are required before the mind can gain knowledge of necessary connection, which connection, however, is thought *a priori* by the mind in the very moment of concept formation.

Philosophically, Shepherd's ambition was to advance a theory of ideas that could defeat the sceptical argument of Hume by appeal to reason's introspective discovery of the causal relation, conceived as a condition of representation. This would fill in the gap in the Leslie affair noticed by David Brewster, who remarked that that the debate had proceeded in such a manner as to ignore the *a priori* defence of the causal relation. As Shepherd sees it, both *a priori* elements and reason are indispensable in defending knowledge of causal necessity.

There is a gap of nearly twenty years between the Edinburgh controversy of 1805 and the publication of Shepherd's 1824 treatise. In 1808, Mary Shepherd was married to a barrister by the name of Henry John Shepherd, after which she became known under her married name of Lady Mary Shepherd. Henry John Shepherd was the son of Sir Samuel Shepherd, a prominent member of the British legal profession based in London. Marriage permanently shifted the centre of Mary Shepherd's world from Edinburgh to London. While in London, she remained close to many of her former Edinburgh associates, but her intellectual circle expanded to include a wide range of brilliant minds living in the southern parts of Britain. Charles Babbage, William Whewell, and David Ricardo, and Richard Whately, for example, were intimate intellectual companions. Mary Shepherd was also connected with a number of important figures in the university community, of whom many were involved in educational reform in one way or another. She frequently entertained these friends, along with members of the legal community, aristocrats, publishers, and a considerable number of so-called Benthamites and 'philosophical Radicals' such as T.R. Malthus, Lord Brougham, J.C. Hobhouse, Henry Hallam, and others. Although members of her social circle had wide-ranging interests and political views, they shared a common commitment to developing an empiricism that could withstand scepticism, a sympathetic view of academic freedom, and a desire for social and political reform.

Shepherd's 1824 *An Essay upon the Relation of Cause and Effect* was followed by the publication of a second major philosophical work in 1827, *Essays on the Perception of an External Universe*.[xvi] Both texts reflect influenced and interests prevalent in her London circle.[xvii] By 1824, it was evident that the growth and success of science made it imperative that there be some kind of empiricist and philosophical answer to Hume. One of Shepherd's close confidants, Richard Whately, attempted to challenge Hume in a way that makes recourse to only to deduction. In his *Historic Doubts Relative to Napoleon Buonaparte*, Whately runs together the image of the Humean sceptic and the Napoleonist in an amusing and socially telling way. Whately asks of the sceptic 'what is the evidence proposed to himself in particular, for the existence of such a person as Napoleon Buonaparte.'[xviii] He calls 'upon those therefore who profess themselves advocates of free inquiry' to 'follow up their own principles fairly and consistently'. 'If after all that has been said, they cannot bring themselves to doubt of the existence of Napoleon Buonaparte, they must at least acknowledge that they do not apply to that question, the same plan of reasoning which they have made use of in others; and they are consequently bound in reason and in honesty to renounce it altogether.'[xix] Whately's strategy then, is simply to shift the burden of the doubt back on the sceptic. An amusing response to Hume and free speech, no doubt, but his deductive arguments would be insufficient to quell sceptical worry. For Hume is not accountable for the quandary in which he left metaphysics, nor is he obliged to personally address any personal inconsistency in philosophy or practice. In short, Whately's challenge is simply not satisfying as a reply to Hume. Though Whately's *Elements* garnered high acclaim as a 'standard' logic, and his eccentricity and wit had endeared him to many, he was surely limited in his approach. As his biographer, Alexander Campbell Fraser, laments, Whately was unable to embrace the new inductive logic.[xx]

Thus, deductive arguments were surely inadequate as a response to Hume. But so too was it a hopeless strategy to deny or ignore the magnitude of Hume's critique. Careful attention to the nature of scientific reasoning and to the defence of causal necessity and induction would be required for an adequate response to scepticism. Mary Shepherd and her circle were particularly sensitive to this need, and one of their central preoccupations was, in fact, with the logic of induction and its bearing on scepticism. The discussion and debate surrounding causality and induction in her circle very likely influenced the direction of the 1824 treatise. For, like many of those who would contribute to the development of thought on induction, she most certainly saw the limitations of Whately's deductive approach to Hume. Shepherd, along with several of her

contemporaries, saw herself as forging a solution by building on the Baconian thought on induction. Thus, Shepherd's analysis of the discovery of causal connection in nature is based on a Baconian form of experimentalism. This experimentalism is equally evident in her descriptions of the introspective discovery that ideas of causes are involved in the determination of representations *a priori* and in her claim that knowledge of the future is based on the discovery of causal hypotheses containing causal necessity. For the emphasis on observation of things in nature and contents of mental representations is empiricist and Baconian in particular, and becomes the starting point for further analysis. In building on this emphasis on inductive and empiricist analysis, Shepherd develops her *a priorism* to introduce an epistemological ascent to the discovery of causal necessity. Ultimately, Shepherd develops an account of experimental reasoning involving both inductive and deductive steps, arguing that we do have knowledge of causal necessity, and that it is grounded in a form of experimental reasoning. In Shepherd's two-step experimental reasoning, the first step is inductive, and the second step is deductive. Shepherd's view is that our particular expectations for the future are first formed inductively, and then justified by appeal to deductive test. It follows that expectation for the future is 'founded upon much stronger principles than those of custom and habit':

> Thus all experimental reasoning consists in an observation, and a demonstration, as has been shown; --an observation whether the circumstances from which an object is produced, and in which it is placed, are the same upon one occasion as upon another; --and a demonstration, that if it is so, all its exhibitions will be the same.[xxi]

In the first instance, the mind takes notice of 'like qualities' and 'invariable sequences of effects' in compound sense objects, and the invariability of sequences leads us to conclude that there probably exists a causal connection.[xxii] Next, an *experimentum crucis* is performed in which the mind considers whether the difference in qualities could have begun of itself, and concludes that 'after the application of an exact experiment, it is impossible to imagine a difference of qualities to arise under the same circumstances'. [xxiii] In other words, her view is that the probable knowledge rests on experience of what does take place on a given trial. However, this knowledge is supplemented with a deductive argument to show that nothing else could ensue under exactly similar circumstances except if the causal principle were violated. It is this argument that justifies the claim that our expectations for the future are based on the idea of a productive principle according to which 'similar causes must necessarily produce similar effects'.[xxiv] This is the defence of causal necessity therefore depends on the earlier discovery that causality is an *a priori* feature of representation.

Shepherd's argument for causal necessity recognises and responds to perceived limitations of a deductive paradigm still championed by Whately. Initially, she coupled introspective analysis of the mind's contents with deductive argument to defend the *a priori* status of the causal principle. Hence, the causal law is discovered through introspection as a 'universal axiom', on the order of a law of thought, so that the mind applies the principle 'Like effects must necessarily have like causes' in determining representations. The further claim that experience can lead to a demonstration that knowledge contains causal necessity is based on a separate argument to show that causal hypotheses discovered by induction are also governed by causal necessity. In looking back to Bacon then, Shepherd evidently saw a need for an updated discussion of inductive method, a need that becomes ever more pressing in the wake of Hume's critique. Shepherd and her counterparts may be broadly construed as endeavouring to address issues around methodology, causation, and metaphysics -- and they saw this endeavour as part of an effort to initiate new strategies in answer to Hume. Shepherd's own response to Hume was based on a combination of both deductive proof and experimentalism, a methodological combination that she hoped would lead to a critically defensible response to the scepticism

engendered by Hume. With this as a context for understanding her response to Hume, we can see that her specific arguments are intended to bridge a gap from the sceptical predicament of empiricist philosophy to a new philosophy of science.

As Shepherd explains, her account places emphasis on the role of reason; for contra Hume, there is an inferential 'step' that the mind takes in gaining knowledge of causal necessity and external existence:

> Now because we perceive, when awake, that sensible qualities are no more than one set of the conjoined effects flowing from exterior objects, *which when meeting with various other circumstances,* are known to be capable of determining the remainder of their qualities; we therefore refer them to such compound objects as their causes, as capable of their further effects; and this reasoning is the *step* the mind takes in arguing from the *present* sensible qualities of things to their *future* properties, and that which Hume eagerly enquires after, denying the possibility of finding it.[xxv]

Shepherd's claims about external existence and knowledge of the future are thus supposed to rest on this foundation. For, 'knowledge of Cause is supposed to be first, because previous to any belief in exteriority', and our knowledge of its manner of action forms the basis for a proof of external causes. Ideas of causes are 'elicited by a separation of ideas of the exterior causes of our sensations, and the sensations themselves'.[xxvi] Initially, through introspective analysis, we discover two kinds of objects in nature; namely, exterior objects, which are acting causes in nature, and sensible effects, which determine specific qualities on the mind when meeting with the human senses.[xxvii] This discovery leads to further introspection, and to the reasoning that leads to discovery of the causal axiom, and ultimately of its role in our forming of law-like causal hypotheses. Shepherd later develops this view as part of an argument against Berkeley. The details of this argument must be postponed for now, but the general view is that knowledge of the external world is inferential. Shepherd suggests that the mind is like a *camera obscura*, and that the inference to knowledge of the external world is to be understood by analogy to the way in which algebraic representations give evidence of quantitative relationships and properties in nature. Shepherd argues that, '*our ideas are as algebraic signs, which give evidence both of their own existence, and the quantities also signified'.* With these and other arguments, Shepherd supplies a foundation for empirical realism, based on knowledge of the continuous existence of external, mind-independent objects.

In addition to the foundational questions concerning causal necessity and knowledge of external existence, Shepherd addresses specific philosophical questions. As Blakey points out, the shorter essays in the latter half of Shepherd's 1827 book, the essays touching upon those very subjects, are intended to rest on the foundation supplied by her analysis of causality. The main subjects of these essays involve attacks on the common sense empiricism of her Scottish and empiricist predecessors, on some of the underlying methodological assumptions of materialists, and so on. Again, there are too many specific arguments to address here, but one of them, concerning God's existence, is particularly salient. Shepherd, without intending to offer a separate theology, defends theism on the basis of her arguments for causal necessity and knowledge of external existence. She defends the existence of God on the grounds that "Whatever variety and change of beings there are, all changes must finally be pushed back to that essence who *began not*, and in whom all dependant beings originally resided, and were put forth as out goings of himself in all those varieties of attitudes which his wisdom and benevolence thought fit.' [xxviii] Thus, God, though a 'hidden mind', is known through reason. For we are able to infer God's 'eternal continuous capacity' as the necessity basis upon which the possibility of change in this world depends. She describes God's nature as

an 'eternal continuous capacity':

> The universal mind, the infinite space for his residence, the amalgamation of all possible qualities in nature in One Being necessarily existing, -- the capacity of perceiving all ideas executed in his own mind by the eternal, necessary, and essential union of such qualities as are fitted to the consciousness of all future knowledge, the circumference, towards which is propelled every direction of motion which forms the creatures, -- this is God, as far as our natures can contemplate such an awful, infinite, and invisible being.[xxix]

The theistic direction in which Shepherd's arguments advance must always be kept in view when considering her work. [xxx] For she advocates for a middle ground between science and theism,
and her compromise involves invoking God as the necessity upon which the world depends -- as a Being whose existence is known by inference, but whose essence is beyond the grasp of rational and empirical analysis. It is in pursuing this goal that Shepherd moves beyond the common sense philosophy to nineteenth century philosophy of science. As Blakey notes in his *A History of the Philosophy of Mind*, the view of causation espoused by Hume and Brown 'appeared to Lady Mary Shepherd to lead by an inevitable consequence to downright Atheism':[xxxi]

> When she undertook a public refutation of these erroneous notions of cause and effect, it must be remembered it was at a time when they were most rampant, and widely spread over the northern parts of Britain in particular. Every young man who came from the Universities of Scotland, attempted to show off his subtlety and academic lore, by denying there was any real causation in the world; all was mere imagination, and a piece of gross vulgar credulity.[xxxii]

Shepherd's effort to prove that Hume and Leslie were analytically mistaken was consistent with her ambition to bring theology in line with reason. No doubt Shepherd's personal conviction was that theism could be rationally defended alongside of science. At a personal level, Shepherd's own faith never wavered, despite the range of views -- including atheism -- encountered in her social circle. But theism was not the only concern of Mary Shepherd. As part of a generation convinced of the importance of political and personal freedoms, the persecution of academics such as Leslie, on the grounds of insubordination to the established Church and its theology, seemed an injustice. As one fellow Edinburgh bystander commented, Leslie's remarks may have been worrisome to the pious, but the proceedings against him were unfair.[xxxiii] Thus, the commitment to theism seemed compatible with having a healthy respect for free exchange and debate of intellectual matters -- a value held dear by many of Shepherd's ilk and generation in Edinburgh. The point was not to insist that others hold one's own view; but to bring others around to one's view by appeal to reason. Thus, issues relating to academic freedom and theism were separable for Shepherd, as they were for many others involved in the Leslie affair.

It is clear then, that Shepherd's life and work relates to conceptual and social developments in eighteenth and nineteenth century Britain. Shepherd lived at a time when there was considerable social unrest in Europe -- at a time when connections between ideologies and institutions were at the forefront of public attention. To some, scholastic philosophy and theology were considered to play significant roles in holding together the very fabric of civil society, so that empiricist critiques bearing on these subjects were regarded not only as ideological threats, but also as pernicious to social order. There was widespread suspicion of philosophical argument, free speech, and academic freedom and their apparently dangerous effects. Empiricist responses to these attitudes and to Hume were of various sorts, although most simply

took for granted that the social unrest was in fact causally linked to ideology and free speech. One reaction involved the assumption that the scientific study of mind and behaviour would enable us to deduce behavioural effects from mental causes, thereby paving the way for government to maintain the social order. James Mill, for example, argued that a deduction from the fixed principles governing human nature could provide the basis for a science of government, and hence a basis for understanding social and political order. Another approach argued that the science of behaviour and mind must be based on an inductive account of causal knowledge. Thus, Thomas Macaulay raised a fundamental methodological objection to Mill's proposal of a deductive 'Science of Politics' in which psychological characteristics are linked to good or bad government. Macaulay charges, 'that it is utterly impossible to deduce the science of government from the principles of human nature'[xxxiv] 'How, then', he asks, 'are we to arrive at just conclusions on a subject so important to the happiness of mankind'?[xxxv] The answer, Macaulay proposes, is by the method of experimentalism, that is, the method of induction:

> Surely by that method, which, in every experimental science to which it has been applied, has signally increased our power and knowledge of our species ... by the method of induction; - by observing the present state of the world - by assiduously studying the history of past ages, by sifting the evidence of the facts, -by carefully combining and contrasting those which are authentic, - by generalizing with judgment and diffidence, - by perpetually bringing the theory which we have constructed to the test of new facts, - by correcting, or altogether abandoning it, according as those new facts prove it to be partially or fundamentally unsound, Proceeding thus - patently, - diligently, -candidly...[xxxvi]

Thomas Brown mocks this confident attitude toward the science of behavior in his poem entitled 'The Paradise of Coquettes'. Brown suggests that the empirical evidence for Scotland's 'national character' is equivocal, and leads no trustworthy conclusion. For, 'If an estimate of our national character were to be formed, in our drawing-rooms' then 'we should unquestionably be ranked as a people of the *gay*'. 'But if it were on the *prevailing poetry of the time'* that 'there can be as little doubt, that we should be characterized as a far more serious generation...'.[xxxvii] Mary Shepherd, however, belongs to another camp altogether. She rejects the deductive science of James Mill, the simple form of empirical generalization of his son, John Stuart Mill, *and* Brown's intuitionism -- laying her trust in a more complicated two-step inductive method. This inductivism was intended as a foundation for all that empiricism might yield as knowledge of the external world and of God. One way or another, it is evident that her philosophical development occurs at a time when controversial assumptions are made concerning ideology, free speech, and their causal connections to behavior. Pressing questions included ones concerning the link between intellectual freedom and the suspected unraveling of civil society, a link that could only be established, it was thought, by science. And, as it turns out, the interplay between the conceptual and social history reveals a set of controversial assumptions concerning causality and induction that come to play a role in the emergence of various sciences and social sciences. The assumption made in Shepherd's day about causality -- like the assumption implicit in, say, John Stuart Mill's harm principle -- take for granted that, though unseen, unknown, and unproven, ideology and excessive freedom of speech very likely perpetrate harms on society and social order.

The roots of the ever-growing fields of the social sciences can be traced back to this period and its assumptions and debates. As part of the changing university scene in Britain, new Chairs in the sciences and social sciences were introduced and the curriculum was updated. Friends of Mary Shepherd's circle associated with the universities at London, Cambridge, Oxford, and Edinburgh, such as Leonard Horner, William Whewell, Richard Whatley, and James Pillans, would become involved in university reform. All aimed for a new approach to education that

could embrace science, theism, and a reasonable level of freedom and tolerance. The proper extent of that tolerance was itself a subject of debate; but most seemed to agree that it would, in principle, be determined by the new social sciences, which were expected to yield knowledge that could help to maintain the social order. This assumption has since proven controversial; for there is to this day, no proof that free speech can in fact present a danger to society and threaten the stability social norms. Nor has it been shown that holding certain beliefs can be linked to specific social norms. Thus, the project of Mary Shepherd and her circle, a project that lies at the very roots of the social sciences, is one that remains steeped in questionable assumptions and motivations.

The above conceptual developments took place at a time of significant ideological and institutional reform in Britain's universities. Intellectually, Shepherd herself was most concerned was to show that the empiricist arguments of her predecessors that had led to both scepticism and persecution were themselves flawed, because based on a limited understanding of scientific reasoning and its connection to causal necessity. Personally, Shepherd was firmly inclined toward political moderation, and so was moved by appeals for academic freedom and religious toleration. She was fully confident that reason could be combined with scientific method in a manner that would vindicate tolerance of religious difference and knowledge of God. In all of this change, neither she nor her friends ever forgot the importance of academic freedom, and the unfairness of the religious persecution to which Leslie and others had been subject. In addition to updating the science curriculum at Britain's four major universities, this circle of individuals conceived of University College in London as a new university that would dispense altogether with religious tests. And it was her tutor's progeny, the James Pillans who became Professor of Humanities at Edinburgh University, who would tirelessly pursue the cause for university reform at Edinburgh, eventually succeeding in reversing the Act of Parliament requiring religious test at Edinburgh. Another friend of the family, Thomas Chalmers, the acknowledged leader in the disruption of the Church of Scotland also founded Edinburgh's New College. This New College symbolically achieved a new beginning at Edinburgh, a university finally at ease in a new era of liberal theological principles. Mary's sister Charlotte, who supported the Episcopalian Church, also supported the new 'Free Kirk', providing the latter with both a Chapel and a Chair in Theology at Edinburgh's New College. A century after the original episode with Hume, and numerous controversies and injustices later, amends for past wrongs had finally been made, and a new era of tolerance and liberalism initiated.

The effort to tell Mary Shepherd's story, and to tell it as fully as possible, is one that is well worth making. One reason is that as a philosopher, Mary Shepherd's work contributes in an important and unique way to the development of empiricism that took place following Hume and the Scottish Enlightenment. Shepherd challenges foundational tenets of the major Scottish thinkers who preceded her and those of her contemporaries as well, systematically dismantling the empiricist theory of ideas in order to secure a defence of theism. It is also important to notice that Shepherd's philosophical answer to scepticism is forward looking, and sheds light on later conceptual developments concerning causality, induction, and theism in nineteenth century philosophy of science. The details of Shepherd's arguments and the soundness and significance of her intellectual contributions must be decided through further philosophical adjudication. However, a full appreciation of Shepherd's arguments will undoubtedly require an understanding of the social and historical context in which her texts were written. For, the specific combination of biographical, historical, and philosophical elements in the story of Mary Shepherd traces a unique historical path. A new narrative emerges from a myriad of facts about the past, and helps to fill in gaps in existing historical and philosophical accounts and to correct distortions created as a result of the oversight of women's contributions to social, political and intellectual history. Last, and by no means least, the issues around academic freedom, the university, political

moderation, and social change that drew in Mary Shepherd and her contemporaries merit the attention of today's reader. For, in many respects, and especially with regard to this cluster of subtle and complex issues, individuals living today faced similar challenges to those living in the early nineteenth century Europe. With this in mind, we turn back in time to Scotland, back even further than the Mary Shepherd's birth and early years, to the larger contours of the world into which she was born.

*

The Scottish Origins of Mary Primrose

1.1 *God and the King*: The Primrose Ancestry

Scotland's first female philosopher, Mary Primrose, was born on 31 December 1777 at Barnbougle Castle near Edinburgh. Little is known about Mary Primrose, and one of the few personal remarks to have survived about her is that she loved her birthplace, Barnbougle.[xxxviii] Built in the thirteenth century, the castle is framed on one side by the Firth of Forth and on the other by the woodland parks of Dalmeny estate. Thus does the castle appear in the backdrop of Nasmyth's 1788 family portrait, in which a ten-year-old Mary looks on as her father, Neil Primrose, 3rd Earl of Rosebery, points across the drum sands toward Hound Point and the Fife lands from which the family took its name.[xxxix] However, Barnbougle's picturesque setting was not the whole of its charms. For the history of the medieval castle was tied to local superstition and legend.[xl] According to one story, an original owner, Sir Roger Mowbray, was killed on crusade, leaving behind a dog whose ghost haunts Hound Point. The Mowbray family was also rumoured to have shipped contraband directly into the castle cellars. Evidently a colourful lot, when Sir Robert Mowbray lost title to the estate in 1620 'through debts and other misfortunes', his demise touched the hearts of many.[xli] One local item, for example, had it that Mowbray's direct representative was 'still in the parish, but reduced to the condition of a common servant.'[xlii] But the Mowbray family's loss would be the Primrose family's profit. In 1662, Barnbougle again became 'the point of victory of strangers' when Archibald Primrose, Mary Primrose's great-great grandfather, purchased the title to the property. [xliii] This heritage, together with a century of Primrose family connections to the castle, would doubtless have accounted for Mary Primrose's emotional ties to Barnbougle.

Legend aside, the realities of living at Barnbougle were far from rosy. In comparison with the many fine manorial homes in the area, the castle was small, cold, and damp. But for its 'fanciful situation within the sea mark, and for its embrazures presenting a strong front to the sea', the edifice was 'in no way remarkable'.[xliv] Moreover, title to Barnbougle was accompanied by the unenviable responsibility of church patronage in Dalmeny, an area that typified the volatility of post-Reformation Scotland.[xlv] Religious dissent in the area had attracted royal attention as early as 1580, when King James VI personally oversaw the presentation of one George Lundie, to the vicarage.[xlvi] More than a decade later, a documented episode attests to the growing divisions within the religious community. This episode dates to 1606, and concerns several Presbyterian ministers indicted on charges of high treason, having denied the King's authority in ecclesiastical matters.[xlvii] Two prominent local figures were involved with the trial. Henry Stewart, a member of the prosecuting team, is said to have ceased to prosper after the trial, presumably on account of his Episcopalian sympathies.[xlviii] In post-Reformation Scotland, such an outcome would be no surprise. The fate of Thomas Hope, a member of the defence council, is more perplexing. For Thomas Hope was handsomely rewarded for his efforts on behalf of the Presbyterian Ministers; he was created a Baronet, given the office of King's Advocate, and his family and fortune thrived.[xlix] On the surface, the message sent by King James VI was a baffling one, since he now appeared to be rewarding individuals with 'known Presbyterian sympathies'.

As the Dalmeny episode shows, the policies and practices -- and ultimately the *will* of King James VI must have seemed unpredictable and arbitrary to the average subject.[l] Such incidents were typical of ecclesiastic episodes throughout the 36-year reign of King James VI, and fostered a growing hostility and mistrust toward the Stuart monarchy. Moreover, it was not merely King James VI involvement in religious affairs drew criticism from his subjects. Especially controversial was the Stuart insistence on the doctrine of the Divine Right of Kings, according to

which kings were appointed by God and were beyond the judgement or reproach of their subjects. Families associated with the monarchy and its involvement in religious affairs, including the Stewarts as well as the Primroses, would have been targets of local hostility. The 'remnant Establishment' in the area, as one nineteenth-century observer reflected, 'had followed its own ideal of Christian duty', and this 'not without painful sacrifice'.[li]

Mary Primrose's family history reveals a rise to prominence that is directly tied to support for the doctrine of the Divine Right of Kings and shows that the Primroses were firmly entrenched in Scotland's hereditary-based power structure well before Archibald Primrose first became 'Laird of Barnbougle' in 1662. By the turn of the seventeenth century, Archibald's Primrose's father and uncle had risen to considerable prominence under King James VI. In fact, Mary Primrose's ancestors loyally defended the politics and policies of King James VI. This aspect of Mary Primrose's family history, particularly as it concerns religious, civic, and intellectual freedom, frames the themes of her life and work in curious ways. Indeed, in an important sense, the story of Mary Primrose begins even before her birth, with the circumstances and controversies that affected her ancestors, and with the context of Scottish culture, philosophy, and history into which she was born. With this in view, we will trace the historical context of Mary Primrose's world, weaving the stories of her ancestors into their wider historical context. Our aim will be to evoke a world from which to mark the emergence of Mary Primrose, Scotland's first female philosopher.

* * *

The most famous of Mary Primrose's ancestors to have risen to prominence under King James VI was Gilbert Primrose, DD, cousin of the Archibald Primrose who first became 'Laird of Barnbougle'. Of particular interest is the story of how Gilbert Primrose's close association to the ecclesiastical policies of King James VI brought him both controversy and good fortune. This Gilbert Primrose was a highly educated and articulate Minister of the French Reformed Church at Bordeaux. Loyal to King James VI, he promoted a royalist vision of Reform aimed at establishing a moderate and unified form of Protestantism. At the same time, when Scotland's most articulate and confrontational of Presbyterian leaders, Andrew Melville, was imprisoned in London Tower in 1607, Gilbert Primrose had been among those to appeal to the King for Melville's release. Primrose, like others involved with the French Church, was no stranger to controversy. Indeed, he may have empathised with Melville's plight. For just a few years earlier, in 1603, Gilbert Primrose had himself fallen into difficulties with his Huguenot patron, Monsieur de Mirambeau, due to suspected connections with the 'cult of images'.[lii] Though remembered in Mirambeau as an enthusiastic supporter of the Reformation, Primrose was nonetheless transferred to Bordeaux. Thus, Primrose could well understand how easy it was to fall from grace in times of religious and political controversy.

For seventeenth century intellectual leaders such as Primrose and Melville, political and theological stakes were high -- sometimes accompanied by great personal risk. One source of peril related to the general perception on the part of the heads of state and church that ideological change presented a threat to the stability of nations. Indeed, in the wake of both the Renaissance and the Reformation, Europe had witnesses a period of unprecedented change, change that was often accompanied by challenges to existing authorities. Consider, for one thing, the hitherto unbelievable feats of exploration and expansion. Renaissance explorers, including Sir Francis Drake and Sir Walter Raleigh sailed to places such as India and America, eventually circumnavigating the globe. These voyages had been possible in virtue of scholarly geographical and navigational research on the part of the best cartographers, mathematicians, and astronomers of the day.[liii] This exploration and discovery of the New World not only

challenged the Continental European's understanding of the world, it also brought a vast infusion of wealth into Europe - wealth from Mexico Peru, India, Africa, and Brazil. New wealth meant that more Europeans were able to afford and aspire to a gentleman's education. This trend in turn led to the emergence of generations of knowledgeable, wealthy patrons who were increasingly interested in, and supportive of, their flourishing artistic and intellectual communities. Thus, the educated post-Renaissance European was engaged in the task of attempting to understand the universe anew -- indeed, of attempting to find new foundations for the entire intellectual world. In most instances, the impetus for social change could be traced back to intellectual discoveries made by church and university scholars. That the situation was a source of irritation is apparent form the remark made by the King of France in denying a charter to the University of Leyden; [saying that the universities were 'hotbeds of heresy']. Since theologians and other intellectuals represented the chief vehicles for conveying new ideas to the public, they ran the risk of incurring the wrath of civil and religious authorities.

New ideas drew Scots such as Primrose and Melville to study in major European centres. There, they enjoyed the privilege of the most advanced education of the day. The novel claims of many Renaissance thinkers stimulated a re-examination of ancient authorities. One of the first natural philosophers to succeed in raising serious doubts about the ancient world-view was Copernicus. Copernicus made great advances in reasoning about celestial phenomena, although his work was ultimately held back by an ancient theoretical commitment to the idea of perfectly circular orbital motion.[liv] Despite this limitation, Copernicus was able to put forward a heliocentric model of planetary motion that succeeded in revolutionising our way of looking at the universe. Copernicus's novel ideas about planetary motion were fully accepted after the ancient Ptolemaic-Aristotelian system of physics had been discredited, a task left to the generation of natural philosophers who followed in Copernicus's footsteps -- figures as Kepler, Galileo, and Bacon. Like Copernicus, all were critical of the appeal to the ancient authority implicit in the received views of their day. Kepler, for example, combined Copernicus's heliocentric insight with a willingness to drop Plato's requirement of perfectly circular orbits.[lv] As a result, Kepler discovered the three laws of planetary motion that fit the observed data so well that the ancient earth-centred cosmology was replaced with Copernicus's sun-centred cosmology. With Kepler's laws, the paths of the planets could be accurately described by mathematical formulas without Aristotelian attributions of goal-oriented motions to objects (teleology). With the aid of his telescope, Galileo observed mountains on the moon and sunspots, raising further challenges to older assumptions concerning the perfection of the planets and their motions. In fact, Galileo quite generally and directly challenged the widespread appeal to the authority of Aristotle. He claimed that the real bar to scientific progress was the appeal to the authority of Aristotle, a habit ingrained by the so-called 'scholastic philosophy', based in an unquestioned foundation in Scripture and Aristotle. In England, Francis Bacon had likewise criticised the authority of Aristotle as a stifling influence on new thought.[lvi] As Europe's leaders came to fear, the advent of new ideas and the fostering of questioning dispositions seemed inevitably to end in the questioning of their own authority. Repercussions for questioning authority were varied. Copernicus had merely been entreated to claim mathematical but not physical truth for his sun-centred model. Galileo, on the other hand, had been excommunicated for upholding his views. Public execution was the unlucky fate of others. Yet, there seemed to be little that the authorities could do to prevent the new information from flowing and to deter the prevailing inquisitiveness.

King James VI was especially sensitive to the challenges accompanying ideological change. In particular, his concern was to preserve the ideology of Divine Right against the assault of Presbyterians such as Melville. Just as his mother, Mary Queen of Scots, had struggled against the Presbyterian system proposed by John Knox, King James VI struggled to contain the

influence of Knox's successor, Andrew Melville. At the same time, both Mary Queen of Scots and King James VI seemed to realise that the welfare of Scotland depended on its ability to catch up with flourishing European nations. For, while the Renaissance and Reformation had profoundly affected the educated Continental European's understanding of the world, few such inroads had been made in Scotland. Scotland's medieval universities struggled to introduce students to the bare fundamentals of the arts curriculum. Far from fostering a culture of discovery, they were bogged down by a conservative response to the Reformation and adherence to an outdated scholastic curriculum. In short, Scotland was rural and remote. With this in mind, Mary Queen of Scots toured the Universities in Scotland, only to convey her dismay when she claimed to find ['eine universite in ruins']. [lvii] The Queen thus proposed the inauguration of a new college in Edinburgh. In 1556-7 the first in a series of lectures was hosted in Edinburgh's Magdalene Chapel.[lviii] But the mere fact that Edinburgh's college had been inaugurated under Stuart auspices was sufficient to condemn it in the eyes of Presbyterians, so that 'it is impossible to resist the conclusion that this first College of Edinburgh disappeared in the tumult of the Reformation, if not earlier.'[lix] Thus, Edinburgh's fledgling college was soon overwhelmed. [lx] In 1561, the Presbyterian Council resolved against 'payit furth of landis and tenementis within this burgh to papists, priestis, freris, monkis, nonis, and utheris of that wikit sort, for manteinying of idolatrie and vane superstitioun'.[lxi] As such, Scotland failed to keep apace of the European Renaissance. In this degenerative state, with an educational system and outlook far inferior to that found elsewhere in Europe, Scotland's colleges struggled to attract the nation's gentry, who typically left to complete the final two years of the four-year arts curriculum, if not their entire program of study, on the Continent.

In comparison to Scotland, the educational milieu on the Continent must have seemed breathtakingly cosmopolitan. Nonetheless, after John Knox died in 1572, Andrew Melville had returned there and to devote himself to raising the standard of education in Scotland. Arriving in 1573, he took up an appointment at Glasgow in 1574 and then St Andrews in 1580. Having been educated by Ramus in Paris, Melville was well aware of the major intellectual developments of the Renaissance. In particular, the influence of Ramus meant that he was well aware of the challenges to the Aristotelian underpinnings of theology and philosophy.[lxii] Rejecting scholastic ideas, Melville began an accelerated program of reform in Glasgow and St. Andrews, re-training faculty and updating the curriculum. These changes must have seemed radical in their day, for when Melville openly attacked Scholasticism and defended the new scholarship, he was denounced and criticised by his colleagues. Melville's questioning of academic authority may have been problematic, but it was his flagrant disrespect for the doctrine of Divine Right that led to serious political trouble. Melville's criticism was more than King James VI could stomach, and so he was cast as a dangerous radical. In 1584, Melville was summoned before the Privy Council in Edinburgh on charges of treason [Cf. this story to date of James Primrose's replacement of John Hay on PC]. Sanctions were then enforced, and, for a time, Melville fled into exile to escape imprisonment. When he returned, he continued his attacks on King James's ecclesiastic authority, which culminated in the imprudent charge that King James was 'Gods sillie vassall'.[lxiii] For his outspoken and treasonable remarks, Melville was imprisoned in the Tower of London. Indeed, it was only through the intervention of French Church Ministers such as Gilbert Primrose that Melville's sentence was reduced to exile in France.[lxiv]

Melville's harsh treatment may help explain the lack of incentive to bring about educational and curricular reforms in Scotland. Penalties such as imprisonment, execution, exile, and the like undoubtedly had a dampened effect on proposals to challenge either curriculum or King. Indeed, there is a near halt to change on the educational front until the late seventeenth century in Scotland. King James VI did re-issue charters for Edinburgh's college in 1582 and 1584, when

Edinburgh College, known locally as 'Tounis College', officially became 'King James Sixth's Academy'. [lxv] King James VI did not provide much by way of financial support, perhaps because the Town Council had exclusively in view a school system that would pursue the academic ideals of Calvin and Knox. Notwithstanding, King James VI conceded a right of *avisamentum* in university appointments to the Ministers of Edinburgh -- a right that would ensure ongoing Presbyterian influence at the college. In addition, the King took the unusual step of allowing that the Magistrates and Town Council of Edinburgh should become the College's governing Patrons.[lxvi]

In the end, the struggle to preserve the old system of fealty proved to be an overwhelming task for the Stuart monarchs. As they saw it, success would depend on a subtle manipulation of ideologies and institutions. King James IV is said to have favoured a sort of 'Armenian solution' to the religious conflicts and political differences arising in Scotland and England.[lxvii] This policy of 'Armenian moderatism', which was promoted by Gilbert Primrose and other royalists, sanctioned the idea that the Reformation was simply a renewal of the old church and downplayed the extent and scope of any ideological change. More specifically, Armenianism moderatism, named after the Dutch professor Jacob Arminius, advocated a compromise aimed at unifying Protestant sects. The Armenian compromise was based on dropping the Calvinist doctrine of predestination, and so was bound to be controversial in Scotland. Royalist theologians did their best to cast this moderate alternative as a trend toward theological liberalism that promoted unity and moderation.[lxviii] This ideological spin was supplemented by a moderate political spin on the Reformation to the effect that, 'we live in a Church reformed, not in one made new.'[lxix] Royalist attempts to introduce moderation, although ostensibly liberalising in spirit and aim, were disliked by the more extreme Protestants in Britain and France, including Melville. Melville saw that King James VI's proposal to unite Protestant churches by dropping of the Calvinist doctrine of pre-destination and to reduce the emphasis on grace and salvation could only threaten Presbyterianism.[lxx] Thus, continued religious conflict was inevitable throughout King James's long reign.

* * *

Gilbert Primrose DD was not the only Primrose ancestor with connections to King James VI and the doctrine of Divine Right. Mary Primrose's great-great-great grandfather, James Primrose, was Clerk to the Privy Council under King James VI.[lxxi] As Privy Council Clerk, James Primrose was not only entrusted with secrets of state. In 1616, he obtained exclusive publication rights to a catechism on high prerogative entitled *God and the King*. The text, which teaches the absolute authority of the King, was made mandatory at all educational levels. Published anonymously, it takes the form of a dialogue between Theodidactus [teacher of religion] and Philalethes [lover of death/oblivion]. The main objects of the work are to describe the ‘occasions and chief end’, ‘special heads and branches’, and ‘principall grounds’ of the ‘Oath of Allegeance’ that British subjects must swear to the King. In particular, the document sets out to establish,

> *First*, That our Souveraigne Lord King James hath no Superior besides God, unto whome hee is immediately subject within his Dominions:
>
> *Secondly*, That the bond of Allegiance from his Subjects unto him as their Supreme Lord, is inviolable, and cannot by any means be dissolved.[lxxii]

The main argument advanced in *God and the King* in defence of the above claims is by appeal to the authority of the Scripture. For example, the text opens with an appeal to the Fifth Commandment, ‘Honour thy father and thy mother.’ It reasons that just as we are obliged to

honour our respective fathers and mothers, so we are likewise obliged to honour ‘all higher powers, and especially such as have Soueraigne authority, as the Kings and Princes of the earth.’[lxxiii] Indeed, kings and princes are not only ‘nuturing Fathers of the Church’, they are also nurturing 'Fathers of the Commonwealth'. For, both evidence and reason teach that ‘there is a stronger and higher bond of duty betweene children and the Father of the Country, then the Fathers of private families.’[lxxiv] Yet, despite this royal claim to fealty, the ‘arising of Seditious and rebellious types’ has forced ‘his most excellent Majesty to secure himself of his Subjects loyalty and allegiance by a Solemne Oath.’ [lxxv] Thus *God and the King* insists on royal prerogative, laying out the role of the King as medium between God and subject.

The doctrine to which *God and the King* appeals is defence of the oath of allegiance is none other that the doctrine of Divine Right. Following this doctrine, the oath claims that the King, and only the King, stands between God and his subjects and that the King is the sole authority over his Dominion. In consequence, subjects must promise to bear faith and true allegiance to the King, his heirs and successors, and to make known to them ‘all treasons, or trayterous conspiracies’.[lxxvi] Moreover, the subject must profess to do all of this, to reject the authority of the Pope, and to be 'a true Christian.’ In fact, in its simplified version, the oath is reduced to twelve statements, each of which claims to establish that the King, and not the Pope, is the sole Paternal authority standing between God and the Dominion. What then follows is a rather long-winded justification of the document by further appeal to the authority of God and the sacred and inviolable union between the King and his Subjects.[lxxvii]

As with most scriptural appeals, much about the relationship between God, King, and subject can be taken both literally and figuratively. On the literal interpretation, as depicted on the frontispiece of the book, the figure of King James VI is depicted as being showered by the rays of the sun, upon which the word 'God' is inscribed. Between the sun and King James VI is the further inscription 'By me Kings Raigne', thereby implying that the will of God is the causal link that confers Divine Right. It is equally apparent from the text that the doctrine of the Divine Right is intended to supplant the authority of the Roman Catholic Church, according to which only the Pope, and not the King, stands in direct relation to God. Doubtless, this picture, with all of its literal causal implications, was indelibly ingrained upon the minds of British schoolchildren. Whatever might be the more vague and figurative interpretations of the document, few loyal subjects would willingly say.

A second, more secular justification for the Oath found in *God and the King* was that it served the political end of curbing the ‘rancorous spirit’ of ‘Romanists’ conspirators, such as those behind the Gunpowder Plot of 1605. Responding to political pressure from Parliament to introduce anti-Catholic laws, *God and the King* publicly lays blame on the Catholics for the Gunpowder plot, thereby establishing justification for the harsh treatment of Catholics. The oath, the text implies, will help to preserve civil order by extinguishing ‘the AEgeptian darkness of Popery’.[lxxviii] Aimed at the King's Protestant critics, such comments might have provided some reassurance that the oath was an instrument in the interest of civil order.

In sum, *God and the King* served to unite the political and theological foundations of the Stuart monarchy. The privilege of distribution rights to *God and the King* must have been a considerable one, and the Primrose family's support of the Stuart monarchy, though controversial in Dalmeny, brought good fortune to more than one member of the Primrose family. James Primrose's daughter, Alison Primrose, married George Heriot, Goldsmith and Jeweller to King James VI. Moreover, his first cousin, Gilbert Primrose MD, was Principal Surgeon to the King.[lxxix] Thus, there was no shortage of Primrose connections to the Stuart monarchy prior to the advent of Archibald Primrose, the first ‘Laird of Barnbougle’.

* * *

God and the King was, in King James VI's day, one of the few ties binding British subjects. Had the royalist vision a religious union been accomplished, and a moderate form of Protestantism put in place, much of the ensuing civil unrest under Stuart rule might have been entirely averted. Britain, like France, was still deep in the turbulence of the Reformation. In fact, back on the continent, things were about to take a turn for the worse for Gilbert Primrose. Whereas in 1603 Primrose had been suspected of harbouring Catholic sympathies, in 1617, he found himself in deep trouble with the Jesuits. Gilbert Primrose, called upon to write a reply to the Archbishop of Bordeaux's *The Pastoral Letter*, committed a serious offence in publicly attacking a Catholic doctrine. We do not know who made the request of Gilbert Primrose to write his reply to Cardinal Sourdis, only that Primrose was not in a position to refuse the requested service.[lxxx] Whatever the circumstances, the text of *Jacob's Vow* would draw the negative attention of religious and political leaders in France.

Primrose's main point of contention in *Jacob's Vow* was Cardinal Sourdis' denial of the civic and religious authority of parents over children in the decision to become Monks. *The Pastoral Letter* advanced a Catholic justification for the tradition of celibacy and Monkhood. [----] As such, it challenged various aspects of the Protestant religion and even the paternalistic authority upon which Protestant monarchs such as King James VI staked their own claim to allegiance. Primrose not only disputed the claim that the Scriptures counsel a monastic life of the Catholic sort, he went so far as to challenge the Catholic doctrine of monastic succession, charging that many High Priests, Bishops and Popes had been 'Idolaters, Hereticks and Socerers'. Such charges were bound to cause immense difficulties with the Jesuits.[lxxxi] Banished from France in 1623, Primrose was lucky enough to find favour with King James VI, thanks in part to the support of the Marquess of Hamilton. Primrose expressed his gratitude to Hamilton by dedicating to him another book, entitled *The Righteous Man's Evils and the Lord's Deliverances.* There, Primrose recalled his experience of having been censured for having held certain religious and political convictions:

> I cannot omit that which toucheth my self: For being banished from France for the Gospell of Christ, and for my nation's sake, and coming to his Majesties Court, where like unto Endimion after his long sleepe, I saw nothing but new faces, and seemed to my self as a man fallen out of the Cloudes; your Honour embraced me with such kindness and humanitie, and recommended me to his Majestie with such affection that I should be justly condemned of ingratitude, if I did ever forget it.[lxxxii]

Thus it was that Gilbert Primrose, with high recommendations, became 'a great favourite' with the King. Principally, he is remembered for his published tracts on reformed religion and for having adopted a loyal stance on behalf of the King's interests in disputes with Roman Catholic Priests.[lxxxiii] But he also appears to have been one of those who promoted that particular vision of moderate Protestantism adopted, sometimes at peril, by King James VI.[lxxxiv] Though none of his direct descendants enjoyed the same level of prominence, Gilbert Primrose became one of His Majesty's Chaplains in Ordinary, was awarded the degree of DD from Oxford, and a canonry of Windsor.[lxxxv]

It seems to have been beyond the Stuart monarchs to bring about such a moderate vision, and the attempt may have exacerbated existing animosities. Many Scots were becoming increasingly convinced that the political policies of Stuart rule and the institution of the Bishopric were doing more harm than good, and there were growing fears of an underlying intent to return

to the 'old religion'.
The Stuart monarchs proved unable to prevail over the will of the Scottish people and the appeal of Presbyterianism. By the time that Charles I had acceded to the Throne and was attempting to restore the Episcopacy, the conditions were decidedly hostile. Charles I introduced various Episcopal Acts, founded the See of Edinburgh in 1633, and, in 1637, introduced the Scottish Book of Common Prayer. This book was singularly unpopular in Scotland. Several prominent residents in the Dalmeny area, including John Elphinstone, the second Lord Balmerino, and Thomas Hope (the successful advocate) had assisted in its preparation, but to no avail. The prayer book was quickly dubbed 'Romisch superstition', and petitions were circulated to the effect that the canons, liturgy, high commission, and bishops were all 'Popish'.[lxxxvi] By 1637, the Scottish Episcopate 'was a helpless ship among deadly rocks.'[lxxxvii]

Thus, Charles I achieved no religious unity whatsoever, and instead succeeded in solidifying anti-Catholic sentiment. Ultimately, the religious controversy ended in the declaration of a Scottish National Covenant of 1638, whose signatories resolved 'constantly to adhere unto and defend' Presbyterianism. Rather than achieving a moderate form of Protestantism, religious opposition had become more deeply entrenched than ever. Following the signing of the National Covenant, there was further religious conflict between the Episcopal and Prostestant Reformers. One prominent resident of the Dalmeny area, John Elphinstone, supported the Covenanters, who opposed the absolutism of the monarch, claiming that the government of archbishops and lord bishops was 'prejudicial and very dangerous both to the Church and Commonwealth'.[lxxxviii] John Elphinstone, Lord Balmerino, was remembered 'for being the best friend that the Covenanters ever had' and for his 'spirited opposition to the tyrannical proceedings of Charles I, for which he narrowly escaped losing his head'.[lxxxix] Whatever the personal danger involved for Elphinstone, his willingness to support the Covenanters could only be read as a sign that the Stuart regime was now in deep water.

Whatever the precise nature of their interventions, the leadership of locals such as John Elphinstone and Thomas Hope was evidently appreciated. They were chosen as representatives to the 1643 General Assembly in Edinburgh that met to consult on matters relating to religion and church government.[xc] The meeting was itself prohibited by the King, who later took measures to annul the pretended convention of Estates of 1643 in Edinburgh which had taken place without the lawful authority of the King.[xci] There were various spins on the purpose of this so-called 'Westminster Assembly'. To royalists, the assembly was seen as an attempt to inculcate a Calvinistic extreme -- it was cast as a 'special polemic against the *via media*.'[xcii] Calvinists, suspicious of the tactics of royalist moderates, purposely excluded them from the meeting. Not surprisingly, each side advanced a claim to represent the more genuine form of moderatism. The royalist claim, built around a system of divine prerogative, was an alternative that the Presbyterians likened to 'Papism'. The Presbyterian claim, defended by the proponents of the Westminster Assembly, was built around the ideals of Calvinism. On this view,

> The Westminster Assembly was called together for two purposes: viz. 1st, To vindicate the doctrine of the Church of England from misrepresentation, and to show that it was in harmony with that of the other Reformed Churches on the continent; and 2d, To effect such changes on her polity and worship as would bring her into closer union with the Church of Scotland and the Reformed Churches in the Continent.[xciii]

This official spin on the Westminster Assembly was regarded with suspicion by the royalists who insisted that the real aim of the Assembly as one of entrenchment of an extreme Calvinistic doctrine of Predestination. In many respects, the Westminster Assembly did in fact lead to an

entrenchment of an uncompromising line of Presbyterianism in Scotland. It achieved a 'union' of factions by bringing more of the moderate Episcopals on side. However, to be fair to the Presbyterian side, their program of assimilation was simply an inversion of the royalist own plan. Moreover, the Presbyterians had good grounds to be suspicious of the Stuart programme. As the evidence shows, the Stuarts persisted doggedly in advancing their unpopular doctrine of Divine Right, regardless of its having already been poorly cast in the public eye.

In retrospect, we can see that the Westminster Assembly did in fact devote much effort to two main aims: 1) It worked to integrating a Calvinist form of Predestinarianism into the articles of the Westminster Confession, and 2), it established a personal relationship with God, unmediated by either a royal Father figure or the Pope as the symbolic basis of religious devotion:

> God alone is Lord of the conscience, and hath set it free from the doctrines and commandments of men which are in anything contrary to his word or beside it, if matters of faith and such commandments out of conscience is to betray true liberty of conscience; and the requiring of an implicit faith and an absolute blind obedience it to destroy liberty of conscience and reason also.[xciv]

While the spirit underlying the above declaration seems one of reclaiming civil and religious freedoms, time would show that in actual fact, implementation of the principles of the Westminster Confession were not nearly as positive as might have been predicted by the idealism of the original vision.

* * *

Given the longstanding service of the Primrose family, and the political system under the Stuart monarchs, it is not at all surprising to find Archibald Primrose, great-great grandfather to Mary Primrose, succeeding his father as Clerk to the Privy Council in 1641. His family was well established in the power structures of Scotland by the mid-seventeenth century, although the nature and demands of royal service was rapidly changing as opposition to the Stuart rule mounted.[xcv]
[Commonwealth &c.] As a devoted royalist, Archibald Primrose followed the Marquis of Montrose in supporting Charles I, and continued in this support during the Commonwealth. Thus, when Charles I was overthrown, he was, along with other royalists, taken prisoner at Philiphaugh. Cromwell’s Scottish administrator, the Marquis of Argyll, later spared Primrose his life. Following the restoration, Primrose's loyalty to the Stuarts proved to be a winning cause.[xcvi]

Archibald Primrose, most highly admired by his descendants, was remembered for his leadership through the stormy politics of mid-seventeenth century Scotland. As one of his contemporaries remarked, 'Throughout the changes of that troublesome period, he maintained so high a character for integrity and wisdom, as to have exercised immense influence over the destinies of his country, whose welfare he had deeply at heart'.[xcvii] In 1651, King Charles II awarded Archibald Primrose a knighthood, and if recollections of Sir Archibald’s character and deportment reflect any measure of truth, this honour may have been well earned. Sir Archibald is said to have possessed 'a great measure of sagacity and prudence, with expedients always ready for every difficulty'.[xcviii] As statesman and aristocrat, Sir Archibald appears to have embodied a Stoic ideal of leadership that was highly prized during Scotland's turbulent past.[xcix] But Sir Archibald’s service to the King extended well beyond steadiness throughout the turmoil of the Commonwealth. Following the restoration, the new constitutional monarchy could no longer be adequately served by a document such as *God and the King*. An official legal constitution setting the limits of rights and responsibilities of the monarch and his subjects was

required. This document, *The Lawes and Actes* of 1661, was edited by the Clerk to the Privy Council of the day, namely, Sir Archibald Primrose.

The Lawes and Actes of 1661 were, ostensibly, a new beginning for the Stuart monarchs in post-Commonwealth Britain. Extracted and collected from the records of Parliament by Archibald Primrose, what *The Lawes and Actes of 1661* in fact comes close to restating the very doctrine of Divine Right that had become so objectionable to British subjects. Given the controversy relating to royal prerogative, the continued allusions to Divine Right on the part of the Stuarts is somewhat baffling. It takes only a little reconstruction with some carefully selected quotes to see how elements of the old Stuart regime are carried over into the new document.

First, consider the tenor of Act VIII, the 'Act Against Papists, Priests, and Jesuits', which explicitly condemns the Catholic framework. The Act establishes the heresy of Catholic worship under the Papal system, and expressly forbids the instruction of children under this system:

> Likeas, His Majesty considering how dangerous it is that children be educat by persons popishly affected, do therefore, conform to former Acts of Parliament, appoint that Children under popish Parents, Tutors or Curators shall be taken from them, and committed to the education of some well affected and religious friend, at the sight and by order of His majesties Privy Council: And Ordains publication hereof to be made at the Mercat Cross of Edinburgh and at other places needfull.[c]

At the same time, the document very nearly reaffirms the secular substitute for this doctrine, namely, the doctrine of Divine Right. Hence, we find in *The Lawes and Actes* a statement that clearly alludes to the doctrine of Divine Right:

> Yet, such has been the madness and delusion of these times, that even Religion itself, which holds the Right of Kings to be Sacred and Inviolable, hath been pretended unto, for warrand of all these injurious Violations and Incrachments, so publickly done and owned, upon and against, His Majesties just Power, Authority and Government...[ci]

In this context, with clear echoes of *God and the King*, is proposed a new and much briefer Oath of Allegiance:

> For testification of my faithful obedience to my most gracious and redoubted Soveraign, Charles, King of Great Britain, France and Ireland, Defender of the Faith, &c. Affirm, testifie and declare, by this my Solemn Oath, That I acknowledge my said Soveraigne only Supreme Governour of this kingdom, over all Persons and in all Causes; And that no Foreign Prince, Power or State or Person Civil or Ecclesiastick, hath an Jurisdiction, Power or Superiority over the same; And therefore I do utterly renounce and foresake all Forreign Power, Jurisdictions and Authorities; and shall at my utmost power, defend, assist and maintain His Majesties Jurisdiction foresaid, against all deadly, and shall never decline His majesties Power and Jurisdiction, as I shall answer to God.[cii]

Given the existing controversies and power struggles between supporters of the Commonwealth and royalists, *The Lawes and Actes* may have sounded like too much of a reinstatement of the ancient doctrine of Divine Right. This doctrine had by this time been many times over rejected as a basis for the monarchy by the people of Britain. Whether justified in their sentiment or not, the political will in post-Commonwealth Britain was set against reverting to the old Stuart regime. The new goal was to establish that the proper extent of civil and religious liberties would be a

matter of secular governance through elected bodies of laymen, rather than a matter of the prerogative of any one individual or party.

Having edited the *Laws and Actes* of 1661 -- a document intended to help to bridge the transition from the era of *God and the King* to post-Commonwealth Britain, a document intended to define and balance the respective rights and responsibilities of the sovereign and his subjects -- Sir Archibald Primrose had firmly established the succession of the Primrose family. He was able to purchase Barnbougle in 1662, and, conscious of the duties of patrons as defined in the *Lawes and Actes,* promptly instituted changes in Dalmeny parish. The popular local Minister, Alexander Hamilton, despite his willingness to express sorrow for the irregularity of his entry into the Presbytery and Synod, was 'Deprived by the Act of Parliament 11th June, and that of the Privy Council 1st Oct. 1662, for not submitting to Episcopacy'. The Privy Council did eventually indulge Hamilton in 1669, and he then returned to Dalmeny.[ciii] However, according to the *Scots Fasti*, Hamilton was again removed from Dalmeny in 1677, on the ground that he drew too many worshippers from Edinburgh. He is again listed in Dalmeny in 1690, but also charged with 'occupying a meeting house in Edinburgh'. Restored by an Act of Parliament in the same year, Hamilton finally left Dalmeny to take up a position in Edinburgh's High Kirk, St. Giles Cathedral.[civ] His ministerial style and charisma may not have suited all, but Hamilton represented a significant voice in the parish. In any case, it is evident that Dalmeny, like many parishes in Scotland, continued to feel the shock and turbulence of the nation's political and religious conflict. The Primrose family, patrons in the area with close associations to the monarchy, would not escape the effects of this turmoil.[cv]

Whether the early success of Mary Primrose's branch of the family can be fairly attributed to their faithfulness to the Stuart doctrine of royal prerogative is hard to say. One thing that is clear is that Mary Primrose's branch of the family showed enough political savvy to continue flourishing through the centuries. As we shall see, the controversies in Dalmeny and the circumstances surrounding the Primrose family's acquisition of Barnbougle would come to shape the views and attitudes of Mary Primrose. From 1662 onward, the legends and charms of Barnbougle and environs would be the inheritance of the Primrose family. Indeed, with a little imagination, we can picture the ghost of Hound Point howling across the waters of the Forth on New Year's Eve of 1777 when Mary Primrose was born. One way or another, we can rest assured that Barnbougle and its surroundings had made their mark on the heart and mind of Mary Primrose.

1.2 Fealty, Revolt and the House of Hanover

Primrose family allegiances grew somewhat complicated in the late seventeenth century, right around the time of Britain's so-called 'Glorious Revolution'. Revolutions tend to build new political affiliations around shared 'revolutionary' ideals, and the Glorious Revolution was, in this respect, a case in point. Families such as the Primroses retained power through the revolution by switching fealties from the Stuart monarchs to the House of Hanover. To many Scots, the transition to the new Hanoverian succession must have been akin to the creation of a divided self. Indeed, a comparison of Stuart and Hanoverian fealty reveals superficial similarities, but deeply rooted ideological differences.

The Stuart monarchs, committed to an unpopular vision of moderate Protestantism and absolute monarchy, hoped that Divine Right and an oath of allegiance might firmly establish the place of British monarch relative to God and British subjects. Attempting to identify themselves with the growing Protestant movement, they appealed to a form of anti-Catholic sentiment that had long

been a popular rallying cry in Britain. But the ultimate goal of their campaign, it seemed, was to bolster their authority and the claim to Divine Right. As such, their political agenda was objectionable to many, and their strategy failed miserably. There grew increasing fears that the already unstable political environment might take a turn for the worse. When King Charles II's son and successor, King James II, appeared to insist on both Catholicism and the doctrine of Divine Right, his will was seen as provokingly contrary to the ideals of post-Commonwealth Britain. For, the British now wanted government to respect the principle of compromise between Parliament and the monarchy. It seemed that King James II would have none of this, and a crisis shortly ensued. Even Scots with royalist sympathies began to lose confidence in the Stuarts, and there grew a conviction that a thoroughly Protestant succession would be needed to ensure good civil government in Britain. Blind allegiance to the Stuarts became impossible, and those among Britain's most powerful elite began to look elsewhere for a line of monarchs to succeed the Stuart regime. In doing so, they turned their attention to Hanover, where a direct Stuart descendant named Mary was married to the Protestant William of Orange.

The Hanoverian succession was welcomed and assisted by Scottish Presbyterians who stood to gain from a change of administration. Like other Protestants, Presbyterians had staked their rise to power on the widespread anti-Catholic sentiment. Though superficially similar to the anti-Catholic sentiment of the Stuarts, the Presbyterian claim against 'Popery' was associated with a very different set of values. For the Stuarts, anti-Catholic sentiment was linked to the doctrines of moderate Protestantism and Divine Right. By way of contrast, the Presbyterian had built their very campaign on the rejection of both Papal and Royal prerogative, which they regarded as illegitimate forms of arbitrary power. In the case of the Presbyterian movement, anti-Catholic sentiment was more than a convenient tool for harnessing support; it was in fact a corner stone of the religious movement itself. It was also based on an ideology directly contrary to the Stuart claim to Divine Right.

The centrality of anti-Catholic sentiment to the Presbyterian movement is evident in a 1683 catechism entitled 'No Popery'. This anonymous pamphlet served to encourage much bigotry and zeal within Scotland's Presbyterian community.[cvi] The text explicitly condemns traditions that spoil 'through Philosophy and vain deceit'. It criticises the Catholic Church for 'her Errors and Superstitions' and because 'we find not in her the only mark of the True church, which is conformity to the word of God, nor the pure Administration of the Sacrament'. Further to this, as the sub-title indicates, the text condemns many specific Catholic beliefs and practices, including those of praying to saints and angels, many Catholic miracles and sacraments, the priesthood, and so on.

For example, on p. 15,

> Q. What Traditions are to be condemned?
> A. All Traditions wherewith they pretend to bind the Consciences of men, and give for Articles of Faith, which S. Paul Colos. 2.8 would that we should take heed of: Beware lest any man spoil you through Philosophy and vain deceit, after the Traditions of men, after the Rudiments of the world, and not after christ.

Similarly, on p. 29,

> Q. Why have you Separated from the church of Rome?
> A. Because our conscience would not suffer us to partake of her Errors and Superstitions, since we find not in her the only mark of the True church, which is conformity to the word of God, nor the pure Administration of the Sacrament.

The anti-Catholic sentiment expressed in 'No Popery' captures an important aspect of the Presbyterian movement. Neither the Presbyterians nor their natural allies, the Hanoverians, were inclined to share in the spoils of anti-Catholic sentiment. As such, the Presbyterians, with their Hanoverian allies in tow, attacked the Stuart effort to associate moderate Protestantism and Divine Right with the rejection of Papal authority. Melville had already shown the way in this respect, and the newfound alliance against the Stuart monarchy simply renewed the effort to cast the Stuart lot on the wrong side of the Papal divide. They succeeded in their efforts, and a new brand of Hanoverian fealty began to emerge, with Presbyterian blessings. In many respects, the task of re-defining the nature of royalist fealty was akin to the task of forging a new identity. Archibald Primrose, son of the first 'Laird of Barnbougle', was among those who attempted to forge such a new path into the future. As any Scottish statesman of his day might well have held, the art of the politician turns on an ability to find rational compromise between opposing tendencies. And, as we shall see, the new Hanoverian fealty did indeed represented an opposing tendency to Stuart fealty; for it was based in an ideology that differed fundamentally from its predecessor at the most basic levels.

* * *

Fears that a regressive political and cultural regime was taking hold began to grow more intense. There was increasing discussion of the proper role and function of government. The ideas of John Locke, now famous for his influential *Two Treatises of Government,* played a major role in articulating a new set of political ideals. At the same time, Locke expressed views that were highly critical of the principles underlying Stuart monarchy. In retrospect, there can be little doubt that Locke's political ideas were instrumental in the developments leading to the downfall of the Stuarts and the rise of the Hanoverian monarchy. Indeed, Locke's progressive ideas on government were well known to the influential Lord Shaftesbury, Locke's friend and patron, and the one who had 'put him upon the study of the religious and civil affairs of the nation with whatsoever related to the business of a minister of state'. Shaftesbury and his friends, it turns out, often consulted Locke upon political matters.[cvii]

Philosophically, Locke advanced a position in defense of religious toleration and of an enlightened account of the origin, aims, and structure of civil government. He advocated socially advanced and even radical views for his day, but justified his political and social views by appeal to Biblical passages. [example] His appeal to Scriptural authority was both typical and effective, and the technique help secure acceptance for Locke's novel claims. While accepting Scriptural authority, Locke rejected as objectionable appeals to Papal authority or Divine Right. He held, for instance, that political power derives from the transfer of the power of individuals in the interest of preserving the natural rights of the citizens and supporting the public good. He rejected the notion of an absolute divine monarch, since this implies a right on the part of the monarch to take away the natural rights of citizens -- that is, the life, liberty, health, and property of the subject. Such government is illegitimate, said Locke, because it violates the natural rights of subjects. For these reasons, Locke and his followers explicitly rejected the claim of the Stuart monarchs to their divine right as Kings. Moreover, they also held that in cases of 'illegitimate' civil governments, conditions might arise under which rebellion and regicide is both justifiable and appropriate.

Lord Shaftesbury and several other Whig politicians took both a theoretical and a practical interest in Locke's political views, hoping 'to raise that spirit in the nation which was necessary against the prevailing Popish party'.[cviii] With new political ideals in hand and trying political

circumstances undermining the nation, there arose a Whig conspiracy, dubbed the 'Rye-House Plot' of 1684. Led by the Lords Shaftesbury, Russell, and Argyll, the conspiracy aimed to overthrow the Stuart regime. Bolstered by the political ideas of John Locke, the conspiracy aimed at the assassination of King James II and the Duke of York, and at a general rising in England and Scotland.[cix] [details] The planned regicide itself was uncovered, but the general effort to mount an overthrow of James II outlived the Rye House Plot.

In addition to developing his political theory, Locke was also working on a theory of human understanding, the very foundation of which was to be consistent with the political views that he had elsewhere espoused. For, both the theories of politics and human understanding were to be founded on appeals to experience, reason, and Scripture. In Locke's day, politicians and aristocrats were accustomed to look for deeper philosophical foundations for political ideology -- foundations that in some way tied political institutions to human nature itself. Seeking just such a foundation, Locke eventually publishing his ideas on human understanding under the title *Essay Concerning Human Understanding.* Ostensibly, the book aims to determine the bounds of human knowledge, but the emphasis on the role of the subject in knowledge acquisition also raises a profound challenge to the authoritarian traditions of Papal authority and Divine Right. [explain] As such, Locke's theory of human understanding further served to undermine the traditional of appeals to absolute authority that Locke and many others by now rejected.

In searching for the boundary between mere opinion and genuine knowledge, Locke proposed to examine the origin of our ideas, to discern the limits of understanding, and to distinguish knowledge from mere opinion. To this end, he places emphasis on the role of the senses in describing the process of knowledge acquisition. Indeed, on Locke's 'empiricist' view, all of our ideas derive from or are built out of reflection upon sensation. Contra the rationalist presuppositions of scholastic philosophy and would-be defenders of Divine Right, Locke disputes the existence of innate and other privileged ideas.[cx] He opposes the predominant 'rationalist' views on knowledge, which lays stress on innate ideas and the role of reason in knowledge acquisition.

One of Locke's 'rationalist' targets is the Cartesian claim to privileged access to certain knowledge through introspection. Following in the scholastic tradition, Descartes' theory places great emphasis on the evidence of reason, casts doubt on the evidence of the senses, and aspires to uphold the foundations of the 'scholastic' philosophical system -- a system that leaves the door open for authoritarian appeals to Papal and Royal authority. Against this authoritarian and dogmatic tradition, Locke argued that the two 'fountains' of knowledge 'from whence all the ideas we have' arise are sensation and reflection. For Locke, these are the only 'natural' sources of ideas that Locke acknowledges. Indeed, Locke thinks that it would be absurd to suppose that we are born with an idea or the God gave us an idea if we could just as well explain the origin of that idea with reference to sensation and reflection. His main point then, is that ideas are built up from sensations, and that the process through which these ideas get built up leads to knowledge. For example, when a child begins to notice that some of her ideas are different and that others are similar, this becomes the basis for ideas of reflection. Ideas of reflection lead us to form more general ideas, and these are meaningful because they are grounded in experience.

Whether foreseen or not, Locke's insistence on the evidence of the senses would eventually be discovered to have undermined standard arguments for the existence of God. On Locke's analysis, the 'evidence' upon which our ideas of God and immaterial existence might be founded was completely beyond the purview of sensation. In the long run, as later empiricists would realize, Locke's theory would present major difficulties for all manner of traditional appeals to

authority and dogma. For, if all legitimate knowledge claims were such that the subject should be able to trace the steps of concept formation to sensation and rule out possible sources of error then what possible foundation could there be for authoritarian claims to direct communication with God? Typically, claims to privileged knowledge of this form were unable to withstand empiricist scrutiny.

Locke's empiricism also raised many questions about the method through which knowledge of non-sensory ideas was acquired. Though it appeared to explain the epistemological foundation for scientific investigations, it was directly at odds with rationalist and scholastic traditions. For example, Aristotle had held that a thing's 'necessity' rested in its independent existence or compulsory nature. If a thing was necessary, it could not be otherwise. But this way of understanding necessity invokes terms that are literally meaningless on Locke's empiricist theory of ideas, because they have no experiential correlate. Similarly, on the Aristotelian account, understanding a thing's 'causes' was a basis for understanding its true nature, but, for the most part, the Aristotelian notion of causality was clearly beyond empirical investigation.[cxi] Given that Aristotelian notions of 'necessity' and 'causality' had for centuries formed the basis for many discussions of the nature of reality and of God, Locke's empiricist view presented significant challenges to this traditional in metaphysics and theology. More than this, however, Locke theory seemed to point to a problem with the everyday sense of 'cause' and 'effect' with which we are today familiar; for in any inference from an observed effect to an unobserved cause, the effect, but not the cause, is an idea obtained through sensation. If an inferred cause is unobserved, then the basis on which we can claim to have knowledge of it on a Lockean theory becomes a matter of some moment.[cxii] What arguably began as part of an effort to undermine a corrupt system of governance, had now spread its tendrils very wide indeed.

Some have argued that Locke did not see the full significance of his theories. While this may be true in the case of his theory of understanding, the same cannot be plausibly said of his political views. There, Locke seems to have known exactly what he was about. When the Stuart monarchs and their supporters got wind of the general gist of his ideas, Locke was soon in trouble with the King. Expelled from Oxford by Royal order in 1684, he escaped into exile in Holland. Meanwhile, back in Britain, the Stuarts began to persecute those suspected in connection with the Rye House Plot. And, like many Scottish nobles of his day, the son of Sir Archibald Primrose, the first 'Laird of Barnbougle', found himself in trouble with King James II. Primrose succeeded in removing himself from difficulty by 'declaring Popish' before the Privy Council in 1688. Afterwards, he left to serve as Gentleman of the Bedchamber to Prince George. This escape was doubtless motivated by support for the Hanoverian succession; however, the prospect of further persecution at the hands of the Privy Council would itself have warranted the flight. Consider, for example, the fate of William Carstares, notorious for having had the 'thumbkins' applied to him by Edinburgh's Privy Council. The torture was intended to procure information about the plot, and Carstares, [suspected as a double agent], is said to have endured extreme agony for more than an hour.[cxiii] Through these and similar persecutions, the Stuarts had repeatedly shown themselves to be incapable of representing the voice of compromise that so many saw as critical for stability in Britain, and so were finally deposed. A new royal dynasty, known as the House of Hanover, was initiated under the Protestant William of Orange and his wife Mary.

In Scotland, a new era heralded new alliances between Presbyterian and Hanoverian leaders. Upon his return to Scotland, Archibald Primrose, now a firm supporter of William of Orange, became, [in ---], one of the Commissioners of the 1707 Act of Union between England and Scotland. Primrose was entrusted with the important task of collecting information about Jacobite activities in the highlands for the new government. [secret agent man?!] This fealty to

the Hanoverian cause was richly rewarded, and so, Mary Primrose's great-grandfather, Archibald Primrose, was created Viscount in 1700 and Earl in 1703. One of the patents of creation refers explicitly to the services of Sir Archibald Primrose to King Charles I and II, and also to 'the good behaviour of his son'.[cxiv] For his part, William Carstares survived his encounter in the Privy Council Chamber and is said to have encouraged King William III to trust the Presbyterians rather than the Episcopalians.[cxv] Carstares' influence must have been considerable, for he was later credited with having persuaded Scotland's General Assembly to accept the Act of Union with England. And, though it took decades for the full significance of Locke's ideas to unfold, the underlying reasonableness of Locke arguments held immediate appeal. With Lockean moderatism and reason on their side, the Hanoverian and their new Presbyterian garnered wide support.

Thus it was that the Stuart monarchs were finally ousted, largely because of their unpopular insistence on the extreme doctrine of Divine Right. Archibald Primrose, in what at least superficially appears to have been a surprising feat of political gymnastics, was among those who endorsed the new vision of Lockean fealty and Hanoverian succession. Now elevated to the peerage, Archibald Primrose espoused values and ideas utterly different from those upon which the family's original rise to prominence had depended. Thus, new times and a new vision of good governance meant a new form of fealty. As the decades unfolded, the development of these new notions of fealty and government would eventually lead to a clearer articulation of new ideals for civil order and freedom. However, the transition to this new regime, and the new alliances that subsequently emerged, were by no means easy to navigate. Indeed, despite its initial foundation in a Lockean ideal of moderation, the realities of political pressure and uncertainty meant that the new order was quickly marred by the same sort of arbitrary and persecutory politics that had been deemed intolerable under the Stuarts.

* * *

In Scotland, the new regime emerged as a political alliance between powerful Hanoverian and Presbyterian leaders whose administration dominated Edinburgh's Town Council, General Assembly, and College.[cxvi] [As part of this shift in administration, newly minted Hanoverians such as Archibald Primrose did XYZ, while] William Carstares became Principal of Edinburgh College. The new Town Council insisted on conservative and intolerant policies. As part of the Revolution Settlement, there was established in 1690 an explicit requirement of a religious test to ensure Presbyterian sympathies and teachings in the university. The conservative Council also insisted on preserving the old scholastic educational system, so that we can safely assume that at the turn of the eighteenth century, the course notes for Regent Pillans' 'Philosophia Peripateti', were still highly relevant.[cxvii] By all accounts, popular themes at the College included salvation, grace, and a proper understanding of the spiritual substances such as 'God, the Angels, and the souls of men'. In effect, the curriculum in Scotland continued to emphasise the ancient and medieval themes of scholastic theology and philosophy.[cxviii] Similarly, Cicero and other representatives of Patristic studies were still much recommended, despite the flourishing of new ideas already well underway elsewhere in Europe. Like the curriculum, the college's political and social policies were also retrograde. As one commentator remarked, 'The glorious Revolution of 1688 was followed by what was known in Episcopalian circles as the "Presbyterian Inquisition", which transformed Edinburgh from an Episcopalian college, with one or two masters who had hobnobbed with the Jesuits, into a Presbyterian seminary.'[cxix] An Act was passed 'with a view of excluding Episcopalians and Jacobites from the Universities, which obliged every Professor before induction to sign a declaration before the Presbytery of the bounds that he accepted the Confession of Faith, and avowed obedience to the Established Church of

Scotland.'[cxx] The Town Council then took measures to eliminate Jacobitism and Episcopalianism, and went so far as to 'abolish outlets for student high spirits which could be exploited and transformed into political demonstrations by those who disliked the Whig and Presbyterian establishment.'[cxxi]

The rigid and sometimes extreme enforcement of policies was by no means universally welcome. In 1703, all but one of the Regents and Professors at the College rebelled against the new regime, signing a petition in defence of their right to call themselves a 'Faculty' with certain powers of election. The Town Council responded to this insubordination in full force, and 'at the beginning of the eighteenth century, the absolute powers of the Town Council over the College were declared by legal authority.'[cxxii] In the face of these and other difficulties, the new Principal, William Carstares, appears to have adopted a conciliatory stance. When the Town Council presented him with a new set of rules governing his office, Carstares carefully but firmly responded. With cautious support for the professors, he stated that, 'I cannot but tell your Lordship and the other worthy magistrates of the city...that I look upon myself as coming into this post upon no other terms than what my predecessors did; and that, as to my part, all affairs relating to this College remain entire.'[cxxiii] Carstares is credited with having smoothed things over in this instance, but there is evidence of ongoing political struggles between university Professors and Patrons, particularly over claims relating to the use of the term 'Faculty'.[cxxiv] Eventually, a Town Council committee was formed to eliminate all such references, and to ensure that the relevant legal documents were 'fairly transumed and more regullarly wrytten'[cxxv] Shortly afterwards, the Town Council also took the opportunity to ensure that Presbyterian teachings were foremost at the College. They 'revised' the curriculum by insisting on Presbyterian religious teaching, moral instruction, and mandatory church attendance. To top it all off, it was further insisted that there were so 'many usefull things belonging to the Pnewmaticks and Morall Philosophy' that public lessons should be given 'at such times as the students are not obleidged to be in their classes'.[cxxvi] Nothing contrary to the Scriptures or the Presbyterian Confession of Faith was to be allowed, and for all intents and purposes, neither the ideological lessons of the Glorious Revolution, nor those of the Renaissance, for that matter, had yet to sink in.[cxxvii]

Given the state of learning in Continental Europe, the advances in the arts and sciences, and the discovery of the New World, it was apparent the local curriculum in Edinburgh had failed to keep apace of the expanding body of scientific knowledge and philosophical inquiry. Education was, of course, key to moulding the ideas of the upcoming generation, and for this reason, remained a point of controversy in Scotland. Conservatives tended to support the scholastic system of learning in which many of their ideals and traditions were embedded. In particular, the Presbyterian administration had an interest in retaining the antiquated curriculum, because Presbyterian theology was based on a combination of the old Scriptural-based scholasticism and Calvinism. Hence, although it might have seemed natural, and even desirable, for Presbyterian Scotland to adopt the newer post-scholastic thought in its early stages, for various reasons, this early adoption did not in fact take place. [explain]

Fortunately, Edinburgh's Town Council did eventually begin to address the need for change, though they attempted to introduce change in a way that would leave intact their conservative educational policies. What the Council in fact implemented was a series of administrative changes at the College. However, in the long run, these changes had a big impact on the curriculum as well. The Town Council looked to Dutch universities such as Leyden as models for updating the infrastructure of Edinburgh College. The old Scotch system -- based on a single college Regent overseeing the progress of a class of students through their four-years of college studies -- was finally replaced by a system in which Professors were responsible for teaching in

a single subject area. For the first time in Scotland, professorships were established in different areas of the arts curriculum.[cxxviii] Astonishing advances in knowledge had already been made in Europe on just such a model, and it was becoming apparent that Scotland's own higher educational system would have to allow for specialisation if it hoped to encourage scholarly research and to entice its own citizenry. On the revised system, professors gained new authority. Indeed, 'A Professor was appointed to pursue for life a particular subject, and, with the whole University teaching of that subject placed in his hands, was in a very different position in point of authority, responsibility, and incentives to exertion from either a Regent or a College tutor.'[cxxix] The major revision to the system then, was not specific to the curriculum, but involved discarding the old system of Regents and tutors in favour of a system designed to encourage specialisation and scholarship.

Thus, as the eighteenth century began to unfold, Edinburgh College would finally witness a series of changes to administrative and teaching positions, changes that would in turn affect the curriculum. The new emphasis on specialisation and scholarly research meant that ideas from other parts of Europe were now being unofficially introduced to Scotland's educational system on a regular basis. The 'enlightened' philosophy from the Continent had a liberal and democratic flavour, and, while it was not considered politically correct reading, it grew in popularity. The ideas of the British empiricist thinkers, such as John Locke, also became objects of serious academic interest. Already heralded as the political and moral thinker whose ideas had ushered in the new monarchy, Locke's newly published work grew very popular.

Interest in the forward-looking Locke turned to his claim to have translated Newton's success in science into a philosophical revolution for a general theory of knowledge. His epistemology became widely accepted as a basis for an account of empirical knowledge acquisition, and seemed to many to support the method of knowledge acquisition implicit in some of the most advanced scientific theories of the day. The significance of Locke's empiricism and its criticisms of scholasticism became an object of great interest in Britain and Ireland. The discussion of philosophy that ensued in eighteenth century Scotland was informed these influences and more -- influences that extended well beyond the official, approved curriculum. Philosophical debate began to overflow the confines of the university and its overly scholastic curriculum, so that most of the important work being done in philosophy was, by this time, outside of the purview of the official curriculum of the professors. The sheer momentum and excitement of the new ideas seemed to spill over into the universities and learned societies of the eighteenth century. Many accepted Locke's philosophy wholesale; although there were some detractors.

One of Locke's best-known critics was the Irish philosopher George Berkeley. Berkeley's fellow patriot and contemporary, Francis Hutcheson, was also a critic. Hutcheson, a professor who moved from Dublin to Glasgow in 1729, rejected several important aspects of Locke's empiricism.[cxxx] In particular, Hutcheson modified Locke's empiricist doctrine by claiming that there exist certain 'finer powers of perception' that lead to non-sensible moral and aesthetic awareness. The strategy amounted to a kind of side-stepping of the bounds of human knowledge implicit to Lockean empiricism, and enabled Hutcheson to defend the claim to moral, aesthetic, and religious knowledge. Thus, the idea that we have a capacity for finer sensibility figures centrally in Hutcheson, whose strategies and ideas would influence an incoming generation of Scottish scholars, including the famous Thomas Reid. Locke, however, had many more converts than critics. Many held Locke that his epistemological perspective was supported by the success of empirical investigations such as Newton's. Newton's physics had by then overwhelmed Britain's intellectual community, and indeed the world. In its day, Newtonian mechanics was the best and most comprehensive scientific system ever produced. Based on a 'rational mechanics', that is, on 'the science of motions resulting from any forces whatsoever,

and the forces required to produce any motions, accurately proposed and demonstrated', a large portion of the *Principia* reasons inductively from phenomena to establish 'general propositions'. Book I reasons from the phenomena of motions to investigate the forces of nature. Book II reasons from these forces to demonstrate further phenomena. Book III then reasons from celestial phenomena to the force of gravity which draws bodies toward the sun, and then generalises the results for both celestial and terrestrial bodies. Since much of the argument in the *Principia* assumes that sense data is trustworthy, there seemed good reason to think that the empiricist theory of Locke was on the right track in the general area of theory of knowledge. Taken together, Locke and Newton seemed to represent an unbeatable duo of philosophical and scientific knowledge.

Having paid top dollar to bring the best educators to Edinburgh College, it was ludicrous to forbid them from teaching a more advanced and up-to-date curriculum. In consequence, changes were finally allowed in the new curriculum. Empiricist philosophers such as Bacon, Locke, and Newton were studied, both officially and unofficially. Bacon, a critic of the scholastics, was introduced in the area of classics; Locke was studied under the heading of moral philosophy; and, Newton was studied in mathematical science. Edinburgh mathematician, Colin Maclaurin, one of the stars of the newly re-modelled professoriate, amazed students and colleagues alike with his ability to teach the mathematical foundations of Newtonian mechanics. In addition to teaching the basics of mathematics, algebra, geometry, optics and astronomy, it was reported in 1741, Maclaurin 'prelects on Sir Issac Newton's *Principia*, and explains the direct and inverse method of fluxions' all of which was followed by lectures on experimental philosophy.[cxxxi] This was considered a substantial improvement over the days of the Regents, when natural philosophy was limited to the *Physical Lectures* of Aristotle.[cxxxii] As a result of Maclaurin's successful teaching of the mathematical basis of Newtonian mechanics, Newtonian science became wildly popular, and it grew nearly impossible to curb the appetite for and understanding of this science. Other professors at Edinburgh, particularly those in areas seen as separable from religion and morality, were likewise engaged in expanding the curriculum. Professor Robert Stewart used works by Issac Newton, Dr. David Gregory, and Dr. John Keill for his natural philosophy courses. John Stevenson, who taught rational philosophy, used De Vries, Locke, and a history of philosophy text. In moral and political philosophy, the chief authors studied continued to be the ancient writers such as Cicero, Marcus Antonius, Puffendorff. But a notable exception was the introduction of Bacon. In most respects, 'The reaction against the old system of Regenting had been complete. The Arts Faculty of the University of Edinburgh, with the exception of its classical department, had been re-modelled after the example of Leyden and Utrecht. In supplement to the Dutch influence, inspiration was borrowed from Bacon, Newton, and Locke.'[cxxxiii]

Though initially thwarted by the administrative policies of the new and conservative Town Council, the ideology that had propelled forward the Glorious Revolution did take root in Edinburgh. Secular leaders such as Carstares and successor William Robertson made efforts to introduce a moderate style of leadership in Edinburgh. At the same time, conservative Council policies slowed the pace of change and established a history of disputes and power struggles between the General Assembly, College, and Town Council of Edinburgh. The Council and the Assembly, always dominant in political and ecclesiastic disputes, attempted to dictate policies at the College. And, over the decades, as competing political factions struggled for control over Scotland's principal institutions, Edinburgh College became embroiled in political disputes of one sort or another. Thus it was that efforts to promote Lockean ideals of moderation and tolerance were often countered by a conservative reaction on the part of local administrators. A new pattern of opposing tendencies had been established.

* * *

Thinkers such as Locke, Berkeley, Hutcheson, Turnbull, and Reid initiated a kind of intellectual chain reaction in Scotland's philosophical community. Their innovative thought inspired Edinburgh's men of letters to new heights of creativity. Significant advances were made in the area of philosophy known as the theory of knowledge or 'epistemology', principally as a result of critical reflection on the philosophical contribution of Locke. This period of innovative thought came to be known to the world as the 'Scottish Enlightenment'. As a development of the empiricist reaction against the scholastic tradition in philosophy, the Scottish Enlightenment found its most dramatically articulation in mid-eighteenth century Scottish thought of Edinburgh's David Hume.

Just as new philosophical ideas were beginning to take hold in Edinburgh, there was a growing Jacobite movement to advance the Stuart claim to the throne. Political and religious unrest began to mount, and the political climate grew very uncertain, very quickly. The Glorious Revolution had redefined the nature of the political union between Scotland and England, and given the magnitude of the changes, and the existing divisions in Scotland, there was widespread discontent. Many Scottish nobles refused to swear allegiance to William and Mary. Others, like Mary Primrose's great-grandfather, Archibald Primrose, supported the new Protestant monarchs. One way or another, the country was more divided than ever, and conditions in Scotland were ripe for revolution. In 1745, Highland Jacobites (supporters of James II and his descendants) and non-juring Episcopalians united against the newly emerging power structure. The details of these Jacobite Rebellions are too involved for our story, but we can at least take note of the fact that the Primrose family, like many others, was divided on the issues. At the same time as Mary Primrose's ancestor, Archibald Primrose, swore allegiance to the new Hanoverian monarch, his cousin, also Archibald Primrose, is remembered as a friend to the Jacobite cause.[cxxxiv]

As fears of civil unrest grew, so too did fear of further ideological challenges. While the views of the intellectual hero of the Glorious Revolution were seen as trustworthy, some of the thought that had taken its inspiration from Locke came to be regarded as less than savoury. Such was the case with Edinburgh philosopher and historian, David Hume. Hume's epistemological views were simply a development of Locke's theory, and though seemingly remote from political themes, they were labelled as 'dangerous' to civil society. As a matter of personal politics, Hume was opposed to revolution and unsympathetic to the popular cause. Hume identified civil war with religious fanaticism, both of which he disliked. In fact, Hume's personal politics were clearly on the side of the conservative ruling class, so it is a matter of some curiosity that Hume came to be regarded as ideologically suspect. Ironically, Locke and his philosophy, widely regarded as reasonable and enlightened, had had a most subversive influence on government. For Locke's combination of reasonable Christianity, political theory, and empiricism held enough appeal to play a substantial and profound role in social change.[cxxxv] But, whatever the specifics, Hume's epistemological views seemed to many to have crossed into a forbidden philosophical territory.

The trouble began when David Hume sought the Chair of Moral Philosophy at the University of Edinburgh in the midst of the Jacobite uprisings of 1744-5. To conservatives, Hume seemed to represent the very sort of ideological radicalism suspected of germinating seeds in those 'hotbeds' of political heresy. What Hume had in fact done was to develop the implications of the empiricist ideas of Locke. In doing so, he seemed to some to have shown that empiricist ideas led to scepticism; for Hume's views had been articulated in a treatise that ultimately challenged the rational and Scriptural foundations for belief in the existence of God. Denounced by

Hutcheson, Hume was denied the position and publicly charged with atheism. This accusation presented for most of Edinburgh's establishment an open-and-shut case against Hume's candidature. For though there was support for freedom of conscience, the bounds of tolerance could not easily be made to stretch to a perceived case of atheism, which was what most of Edinburgh's leaders were prepared to charge against Hume.

Hume's theory of ideas was largely based on Locke's empiricism. Hume divides the perceptions of the mind into two classes, impressions and ideas. He also identifies three distinct faculties of the mind, sensation, memory, and imagination. Simple ideas copied from sensation provide the materials for complex ideas. Having modestly elaborated on Locke's empiricist foundations, Hume then defended some philosophically and theologically shocking conclusions about the limits of human knowledge. On the basis of his empiricist theory, Hume argued that we have neither ideas nor knowledge of immaterial substances such as the soul or God. On the same grounds, Hume also denied the possibility revealed knowledge of God, the rationality of believing reports of miracles, and the soundness of all of the traditional proofs for the existence of God. Shocking as these claims were in his day, Hume is today most celebrated for his insights into the limits of our knowledge of causal necessity. The specific thread of Hume's account went as follows. For Hume, knowledge is built from relations of ideas and matters of fact. As Hume explains, characteristics of relations of ideas are that they are known by demonstrative proof; known by the operation of comparing ideas with one another; and, cannot be denied without contradiction. Matters of fact, on the other hand, are not known by demonstration because they depend on reference to what actually exists somewhere in the universe. Such matters of fact can be denied without contradiction. Hume attaches significance to the fact that we are unable to form a belief in a cause and effect connection after having seen just one instance or by analysis. He takes this as very probable evidence that our causal inferences must be based on a habit of mind. The habit is developed by repeated experience of resembling cases rather than by reasoned analysis. Two things are necessary for causal inference, an impression or idea of some object, and experience of customary conjunction between this object and another. Hume's discussion of causal reasoning turns out to have significant ramifications, because it implies that the justification for knowledge of causal relations is based on circular reasoning: For, knowledge of matters of fact depends on causal reasoning, and knowledge of causal relations depends on knowledge of matters of fact. Thus, Hume has shown himself to be a sceptic by arguing that we have no rational justification for our expectation that the future will resemble the past. All that experience can tell us is that a certain cause has led to a certain effect, not that it will or must lead to that effect. For all we know, the course of nature could change -- there is no contradiction in this possibility.

Hume's critique of causality also challenged revealed and natural religion, and hence, ideas upon which religious and civil institutions still relied. Hume questioned the Bible and the theological arguments of philosophers and theologians from Aristotle to Thomas Aquinas, still taken by conservatives to be authoritative. Aquinas was famous for his five arguments for the existence of God, although he is best remembered for two of his five ways, versions of what is called the 'cosmological' argument for the existence of God. Based on an Aristotelian insight, Aquinas' 'unmoved mover' argument is this: All things are observed to be in motion, so there must have been some 'First Mover' that set all things in motion. This unmoved mover is God. Aquinas is also credited with the first cause argument, which goes as follows: We observe those things around us to be causally related. There must be some one thing that first set the chain of efficient causes in the world in motion. This thing is the 'First Cause', or God. Aquinas had a number of other ways, and he even had an early version of the 'design' argument, which appeals to the purposeful nature of things in the world, amongst his five ways to prove the existence of God. Since virtually all theologians endorsed these arguments in Hume's day,

Hume's critique of causality could not have failed to put him at odds with all factions of his community.

The political and intellectual controversy that unfolded in the Hume affair was insubstantial, although it is interesting to note that the struggle over Hume's candidature can be directly tied to a power struggle between competing Whig factions in Edinburgh:[cxxxvi]

> The first thing one must understand about Scottish university appointments in the eighteenth century is that they were politicized, and that the politicians concerned with them were intent upon controlling every office of profit and honour in the kingdom. The more one controlled, the greater one's prestige, power, and ability to manage affairs in ways useful to oneself and one's associates or masters in London. The privilege of managing Scottish affairs for the ministry in London had been sought since c. 1714 by two competing Scottish factions -- the Squadrone and the Argathelians. Both were Whiggish in outlook, but their territorial bases and leaders were very different.[cxxxvii]

Yet, it is unlikely that Hume's failure to secure a university position can be convincingly attributed political power struggles. Hume himself had friends in both Whig camps.[cxxxviii]

The temptation to reconstruct the theological and political controversy as foremost in the Hume affair is a strong one, but one that must, to an extent, be resisted. In hindsight, it seems plausible to say that Hume's trials and tribulations were eclipsed by local political struggles. For, it is well to remember that from the perspective of competing factions in the political elite, the truly pressing concern in 1745 was not Hume, but Jacobite unrest. Moreover, it is also important to remember that Hume's difficulties arose at a time when a new Hanoverian administration was struggling to establish itself in Britain. In post-Union Scotland, the struggle for political power and stability was an especially difficult one, and Hume's failed candidature received relatively little public attention. The real problem facing the various ruling families was how to prevent subversion of their hold over the Church, the town, and the College -- the very institutions, and indeed the nation, through which they exerted their power. In the final analysis, the struggle over Hume's appointment was buried under layers of history and politics, so that neither the tenets of Hume's philosophy nor his accomplishments received much of a hearing. Moreover, given the Episcopalian and Presbyterian rivalry that always accompanied political unrest, a cry in support of Hume's right to freedom of conscience would have been, to put it mildly, untimely. The charges of atheism against Hume could only have served to feed existing worries: At some level, it must have been apparent to all sides, as well as to Hume, that the dangerous philosophy of 'heresy, deism, scepticism and atheism' would have to be quashed.[cxxxix] There was no need to vet the philosophical and theological charges in any sort of debate. For the charge of atheism was beyond smoothing over. And, the political instability of the day meant that all parties would be especially cautious in the face of controversy touching on the foundations of religious and political belief. Moreover, given the causal connections implicit in both religious and royalist arguments, Hume's claims about causality and religious ideas presented threats on all fronts. In Hume's case, the struggle for civic and religious freedom was not a central issue.

In sum, all things considered, Hume was a sure loser, even if his fate was, by all accounts, unjustly delivered. He was quite simply a casualty of a country deeply divided on both political and religious grounds. In the end, the Jacobite rebellions were in fact successfully put down, but only just. At one point during the uprising, the town of Edinburgh briefly fell under a slight threat of a Jacobite invasion. Edinburgh's professors, perhaps more in the interest of publicity than anything else, rose to the defence of the town. The event succeeded in drawing positive attention to the leadership of the professoriate, and became legendary in the popular

imagination -- if not entirely effective. Indeed, the early death of the mathematician Colin Maclaurin was attributed to his heroic efforts to defend Edinburgh from the Jacobite threat. After the crisis, the professors further established their credibility by strengthening the political alliances linking the old ruling Whigs and the Presbyterian leaders in the Church of Scotland.[cxl] As for Hume, at least some of Scotland's professors were quietly sympathetic. Francis Hutcheson, Hume's ideological opponent and critic, was offered the Edinburgh post. Hutcheson declined, and another philosopher, William Cleghorn, took up the position. In Dalmeny, the only local known to have openly expressed sympathy for Hume was Henry Erskine. Given personal and political affiliations, it seems likely that the Primrose family would have been among Hume silent supporters. But the uncertainty of the times, politics could well have placed them on either side, regardless of their private views on the implications of Hume's doctrine.[cxli] Neil Primrose's mother, Mary Campbell, was sister to the fourth Duke of Argyll, who, having recently inherited both title and political power from his cousin, was one of Hume's principal supporters.[cxlii] In any event, Neil Primrose, Mary Primrose's father, would have taken at least some interest in the episode, for he was a student in William Cleghorn's Moral Philosophy course in 1746.[cxliii] All the same, divisions within the Campbell family, Neil Primrose's own differences with his father, and his uncle's 1746 execution for treason all cloud the issues. The historical evidence is equivocal, and suggests that Neil Primrose could well have been personally and politically allied with either Hume's supporters or his detractors. Either way, few were willing to openly push the bounds of moderation in support of the 'infidel' Hume during the Jacobite turmoil, and it is doubtful that Neil Primrose openly took a stand on the issue.

1.3 A Childhood in Dalmeny

The second half of the eighteenth century was comparatively peaceful in Edinburgh. After decades of strife, roars of controversy and unrest subsided into tired rumbles. However, controversies such as that surrounding Hume and his philosophy did not entirely die out. Ten years after the Hume affair, the General Assembly of the Church of Scotland felt the need to unanimously articulate its 'warning against the infidel principles of Mr Hume'.[cxliv] Yet, in spite of the ongoing stigma, and in a strange way, both Hume and his philosophy became part of the very fabric of Scottish society. Some of the most prominent members of Edinburgh society were on intimate terms with Hume until his death in 1776, and through these channels, there grew an ongoing support for Hume and his work. This support took the shape of a humanistic appeal for tolerance -- an appeal that survived in Edinburgh long after the academic scandal had blown over. The moderate stance was not, however, universally welcome. Conservative members in Edinburgh society favoured tighter social controls and greater restrictions on liberties than those advocated by moderate leaders. However, fortunately for Mary Primrose, the underlying antagonisms between liberal and conservative elements in Edinburgh society rarely escalated into civil disturbances in the decades of her youth and young adulthood. Indeed, occasional rumblings and fears about civil unrest aside, the second half of the eighteenth century was a period of relative stability and prosperity for Edinburgh's upper classes.

Mary Primrose, like many of her generation, seems to have enjoyed an idyllic childhood. At least, the remaining clues that can be pieced together would suggest as much. The enchantment of Barnbougle and the natural beauty of its rural setting must have offset the limitations the five-century old dwelling. The 'charming park of Barnbougle', as one eighteenth century observer remarked, is 'characterised for its bold waving surface, composed of the finest heights and lawns, and also for the variety, elegance, and fancy, of the rides within its circuit.'[cxlv] Indeed, its prospect was said to extend 'as far as the eye can reach', and the scenery was described as 'among the finest in Europe.'[cxlvi] Barnbougle was in fact a local landmark, and, having enjoyed generations of ownership, the Primrose family had grown attached to the

property. On one account, 'The 3rd earl decided to have a new residence built slightly inland, the story being that one day he had just risen after dinner and was soaked by a large wave.'[cxlvii] However, whatever minor inconveniences the castle may have occasionally presented were evidently overcome, for Neil Primrose could not bring himself to put such plans to action, and his settled view was that any home good enough for his ancestors was good enough for his own family. Thus, during the youth of Mary Primrose, the family continued on as they had for many years, dividing their days between London, Norfolk, and Barnbougle.[cxlviii]

In London, the family leased Holland House in Kensington while the children were young. Holland House had recently passed into the hands of Charles James Fox, the prominent Whig leader who became a vocal opponent to conservative policies under King George III.[cxlix] In later years, Holland House would gain notoriety as a social hub for the Whig party, [but how long before this?], Neil Primrose had decided upon Barnbougle as a primary residence for his young family. Indeed, to the eighteenth century aristocrat, the country held many attractions, both real and imagined, and children in wealthy families were often brought up 'in the fresh country air'. At a time when diseases such as smallpox and rickets threatened the survival of young heirs, and reckless gambling could land a family in poverty, the country came to represent an escape from the ravages of disease, depravity, and poverty.[cl] Drawing on and reinforcing these stereotypes, authors such as Locke and Rousseau promoted the romantic ideal of country living. Locke, for example, emphasised the importance of health to the education of children, weaving together practical, moral, religious, and civic advice in an account that was widely accepted in eighteenth century Britain. As Locke convincingly argued, parents were responsible for seeing that their children received a proper education, and for ensuring 'such strength and health to their Bodies, such vigour and rectitude to their Minds, as may best fit his Children to be most useful to themselves and others'.[cli] Thus, country living was not merely a lifestyle suited for leisure, but essential for the healthy upbringing of children. The country was 'the place from which the nation's leaders must spring and the untainted paradise which must sustain them.'[clii]

The Primrose family had several country homes, and as the years went by and Neil Primrose's family grew in number, Barnbougle became the primary residence.[cliii] The countryside there, it turns out, was perfectly suited to the ideal of country living. One of several coastal parishes near Edinburgh, the view from the rising banks of the Forth encompassed 'numerous towns, villages, seats, [and] woody hills'.[cliv] Thus, the local parish, Dalmeny, offered views extending to the seats and villages of

All told, Dalmeny, along with the nearby parishes of Cramond and Queensferry, included dozens of fine homes. These were owned or rented by prominent figures, members of the Dundas, Erskine, Napier, Law, Stewart, Hamilton, Cockburn, Cleghorn, Blair, Campbell, Wilkie, Inglis, Chalmers, Bonar, Caird, Brewster, Jeffrey, and Pillans families.[clv] The legal profession was particularly well represented, and over the decades, local notables included Henry Erskine, Hugh Blair, Henry Cockburn and Francis Jeffrey. There were also prominent clergy, scholars, inventors, statesmen, professors, and university administrators. The accomplishments of the various individuals with connections to the area are too many and varied to describe in passing, and it suffices to say that the area attracted many of Edinburgh's gentry. They studied, worked and entertained in their country manors and town residences, commuting on the 'Great North Road' from Edinburgh, described as 'one of the pleasantest and most frequented in Scotland'.[clvi]

The distinguished local community must have presented a stimulating and rich environment for a country childhood. Music, drama and reading were important aspects of country life, and several of the country homes in the area might easily have served as a 'court' to shelter artists, writers, musicians, and actors.'[clvii] Like other children living in manorial country homes, Mary

Primrose would have enjoyed these forms of cultural enrichment, as well as some of the special freedoms associated with country living. Children living in country manors 'had greater opportunities than many others to express their feelings and energy, in wild games which could take place in the fine landscapes and shrubberies their families owned.'[clviii] Indeed, there is evidence to suggest that the Primrose children did in fact enjoy such a carefree and unspoiled childhood. Consider, for example, that only a strong sense of freedom and adventure could have led to the contemplation of the following mischief on the part of Mary Primrose and her siblings. On one occasion, Mary Primrose tattled that 'Lady Charlotte had declared her intention of driving a four-in-hand phaeton dressed in a drab coat with seven capes and a long whip.'[clix] Moreover, it was not beyond the pale for the Primrose girls to steal away to the local manse to engage Mr. Archibald Bonar, Minister of Cramond, in 'theological scéances'.[clx] This level of independence would have been unusual for Scottish girls of the period; however, the freer standards associated with country living and the social standing of the Primrose family would have mitigated the stricter rules appropriate for city living.

While country living had its freedoms, it also had its formalities and traditions. Religious observance, for example, was nearly universal. The church and parish history at Dalmeny had long been one of Episcopalian and Presbyterian rivalry, and this rivalry appears to have persisted throughout the eighteenth century.[clxi] Neil Primrose was probably among the so-called 'Faithful Remnant' of Episcopalians who, having been turned out of St. Giles Cathedral, met in secret over a shop in Carubber's Close, and then later, in Charlotte Chapel on Register Street.[clxii] Whatever the particulars in Dalmeny, it is clear that various religious divisions prevailed. By the late eighteenth century, there were 143 seceders in the parish, including one clergyman.[clxiii] The large number of Covenanters in the area suggests that the Dalmeny figure reflects the growing divisions within Presbyterian Church. Indeed, following the triumph of Presbyterianism, it was not only Scottish Episcopalians, but also the members of other dissenting Presbyterian congregations, who were forced into secrecy and covert worship.[clxiv] Thus, over the centuries, the local communities had continued to be divided on religious grounds, and Mary Primrose would have been sensitive to the ongoing religious conflict in Scotland.

Whatever their emphasis, the sermons preached in the Dalmeny area during Mary Primrose's youth were probably quite stimulating and rich. Both the Dalmeny and the nearby Cramond church had highly educated ministers. For those times when the mind did seek an escape, there was still plenty to fill the eye and the imagination during the service. Dalmeny church dates from about 1160, and, like the Cramond and other local churches, it has a rich history.[clxv] Dalmeny church, which is ancient and beautiful, is described as 'a small but elegant fabric of Saxon architecture' and as 'one of the finest specimens of that style in Scotland'.[clxvi] Architectural details include an elaborately carved entrance door, 'with fabulous animals, figures and grotesque head, probably taken from the Bestiary, the product of credulous medieval imagination'.[clxvii] The arches of the apse, chancel, and nave are decorated with Norman chevron carving, and mason's marks cut into floor slabs date the church to its medieval origins.[clxviii] Indeed, traditions of worship at the site extend from Celtic to Catholic, Catholic to Episcopalian, and finally to Presbyterian worship. By the late eighteenth century, the Episcopalian patronage of Mary's father, Neil Primrose, would likely have introduced tensions for the Presbyterian congregation -- the same kinds of tensions and conflicts reflected quite generally in the history of Scotland itself. In view of this, whether Mary Primrose, baptised at Barnbougle Castle on January 8, 1778, was ever dipped into Dalmeny's baptismal basin -- inscribed 'Dalmeny Kirk 1778' --, we can only guess. Nonetheless, we do know that the Primrose family attended services at Dalmeny church, which stands as a living monument to the many forms of religious ritual and devotion witnessed on its grounds. At the same time, Mary Primrose evidently became

familiar with the conventions of Anglican worship through her sojourns in London. On one visit to London, Mary Primrose wandered into an Anglican Church, and found her religious experience suddenly expanded beyond the familiar limits:[clxix]

> Once --it was a Sunday-- my mother heard the church bells and went as the sound led her. The bells stopped, and she heard the organ peal out. In the Scotch Church at Dalmeny there was no organ. She went in, and there sat through the service in wondering delight at the beauty of the music and the prayers of the liturgy. She got back safe to the inn, but missed her dinner. However, no scolding came, and her father seems to have sympathised in a kind of silent way.[clxx]

Given the evidence, one is easily led to suspect that the Primrose family was in a delicate situation in Dalmeny with regard to religion. As 'Laird of Barnbougle', Neil Primrose was legally required to provide funding for the Presbyterian parish and by the Patronage Act of 1712, was entitled to appoint parish ministers. In 1775, Reverend Thomas Robertson was invited by Neil Primrose to take up the charge of Dalmeny, and his appointment, by his own admission, was controversial.[clxxi] Moreover, the family was on intimate terms with at least one Presbyterian dissenter, James Pillans, a'tutor or 'Dominie'.[clxxii] In view of the history of religious conflict in Scotland, the Primrose family's diverse religious affiliations are probably significant. They suggest sympathy and sensitivity toward problems arising from religious divisions, and a willingness to treat religion as separable -- to some extent at least -- from educational and political matters. Such an attitude is now common, but was less widespread in the late eighteenth century.

There is much evidence to suggest that Mary Primrose's childhood in Dalmeny was relatively peaceful and pleasant. Edinburgh society enjoyed a period of artistic and intellectual flourishing, and, as such, the spirit of the times was, for the most part, positive and open-minded.

* * *

As daughter to the 'Laird of Barnbougle', Mary Primrose enjoyed many advantages. She received a fine education, much better than was generally accessible to children of her generation. She did not, for instance, attend the local parish school. In the late eighteenth century, Dalmeny's school, despite the small size of the parish, had about 50 to 70 students per year. The subjects taught there were typical, including English and writing, Arithmetic, Latin and French.[clxxiii] For whatever reasons, whether due to church patronage or to the popularity of local teachers, the Dalmeny school developed a good reputation. The Reverend Thomas Robertson, himself a Fellow of the Royal Society of Edinburgh, remarked that, 'The purity of the air has, among other considerations, occasioned a great number of gentlemens sons to be sent as boarders to the parish school here.'[clxxiv] There were numerous girls in attendance at Dalmeny as well; the school log for 1792 shows that about one third of Dalmeny's students were girls.[clxxv] Whether this statistic is representative of the educational opportunities generally available to eighteenth century Scottish girls is difficult to say. Indeed, it is hard to estimate the extent of the education available to girls in the parish school system. [clxxvi] But, in any event, as Mary Primrose's daughter reports, 'my mother was brought up chiefly at Barnbougle (though sometimes in London at Holland House), on the old fashioned Scotch plan with a Dominie --one Mr. Pillans.'[clxxvii] Thus, Mary Primrose was among a fortunate minority of Scottish girls to receive formal instruction from a 'Dominie' or tutor, and there is reason to think that they received excellent training at home.

Mary Primrose and her sisters were doubly fortunate. Not only did they have a tutor, their tutor, James Pillans, was an exceptional educator.[clxxviii] Though the practice of engaging tutors to educate children of both sexes was commonplace among the well to do, the nature and extent of the Primrose girls' education, and the employment of a separate tutor for the girls was somewhat unusual.[clxxix] Another unusual aspect of girl's education was the decision to employ as tutor a man of strong Presbyterian convictions. This, and other evidence concerning the Primrose family, points to an open-minded and liberal educational environment.[clxxx] Apart from these exceptions, much about the educational pattern in the Primrose household was typical for its day. Hence, 'The education of children, at least during their early years, often took place within the country house itself. There was a common belief that private education by a tutor produced a more virtuous child.' [clxxxi] Moreover, we might expect that Pillans, a religious man, was possessed of the sort of character though to engender good values. 'Tutors and governors were required by writers in the early years of the eighteenth century to be virtuous above other qualities.'[clxxxii] Indeed, though there are few descriptions of the elder Pillans, his religious and moral convictions are evident from the ones that remain. To wit, the Primrose girls describe their own tutor as a 'descendant of the old Covenanters' who had 'himself had seen "Old Mortality" cleaning the inscriptions on their gravestones.'[clxxxiii] Another writer describes Mary Primrose's first tutor as 'a scholastic person, who believed in the inextension of the mind' -- a portrayal that suggests that the course notes of the Peripatetic Regent named Pillans may well still have been in circulation in the late eighteenth century![clxxxiv] In any event, however curious the circumstances, the Primrose girls appear to have been subject to a rigorous and effective educational program by their ageing tutor.

Pillans may have been given to a little ranting about 'Old Mortality', but it was evidently in a spirit of egalitarian largesse and intellectual curiosity that he tutored the Primrose girls. He was an ageing man, probably between the ages of sixty-five and eighty, when he tutored the girls, and they appear to have regarded him with a mixture of fondness and humour.[clxxxv] Arabella Primrose, the youngest daughter, is said to have had little interest in scholarship, and to have taken up nothing 'but a sort of jocose kindly feeling towards the old tutor himself, - laughing at him gently.'[clxxxvi] Such frivolousness does not appear to have been characteristic of Mary or Charlotte, and with these interested and serious-minded pupils, Pillans appears to have been an outstanding tutor. He took his role as educator to heart and engaged the imaginations of his pupils with wonderful stories of adventure and discovery: 'There was one account, that none would believe but my mother, of the first steamboat on an American river. Many years afterwards, a small steamboat was tried on the Thames, and then "seeing was believing".'[clxxxvii] It is also evident that Pillans approached the task of tutoring with considerable tact and commitment. He emphasised the basics, but encouraged the girls to pursue subjects to which they were naturally drawn. 'Mr. Pillans taught the girls Latin, for the basis of language, Geography, Mathematics, History, and besides, a vast deal of thinking upon the elements of Truth as to things in general. Out of it all each pupil 'took up' the portion which fell in with her own mind's natural working.'[clxxxviii] The two older Primrose girls, Charlotte and Mary, became keen scholars. Charlotte, the eldest daughter, who excelled in Latin and Mathematics, was often called upon to help with estate accounting. Mary, the middle daughter, took an interest in philosophy.

Though most of the particulars of her education are lost, we can safely gauge that Mary Primrose's youthful interest in intellectual matters was further encouraged by a culture of letters that existed among the five Primrose siblings. For, 'the five young people managed to live a very sociable brother and sister life together, with a good deal of love for books, talk, country roaming...[and] used to write each other long letters like essays, and reply punctually.'[clxxxix] This practice may have been encouraged in part for the sake of the two younger Primrose boys,

although it seems that it was Mary who ended up the scholar in the family. In addition to formal instruction and literary aspirations, the Primrose children had access to many books in the family library. An 1820 catalogue of the Primrose family library lists about 1000 volumes, a considerable number for any private library of the period. It seems to have been a difficult job to pry the young Mary loose from some of these books. On one journey from Scotland to London, Mary accompanied her father in his carriage, '...and by degrees took out of one pocket a volume of Milton, and out of the other Pope's translation of the Odyssey. After a time he took hold of her chin, and turning her head said in a kind of melting voice, 'Child, thee needn't keep at books whilst we're travelling - does your mother put such strict orders on you?'[cxc]

If such comments are a fair indication, Mary Primrose took her education even more seriously than was expected of her. In adulthood, she reflects upon her youthful efforts in a letter to Charles Babbage, recollecting the early origins of her analytic bent and interest in higher learning:

> ...I can truly say that from a very early age, I have examined my thought, as to its manner of reasoning in numbers; and from time to time have applied such notices to other reasonings, either for amusement or improvement; - indeed chiefly in order to chastise the vague, illusory, illogical method of reasoning admitted with every part of discourse, whether gay, or serious, & into each department of literature however important its object.[cxci]

Perhaps most significant of all to the development of Mary Primrose as a philosopher, was that she and her sisters were encouraged to learn the subjects required for higher education. This, along with the quality of their educational instruction, must have played a significant role in shaping the direction of Mary Primrose's life. For Mary Primrose evidently applied herself to higher education in an unexpectedly devoted manner, at a time when there was no official support for or endorsement of higher education in women. But, given the developments in Scottish philosophy and culture in her day, her interest in classical literature, and in subjects traditionally associated with higher learning, it is not as surprising as it might at first seem. Moreover, the pursuit of philosophy was very much 'au courant' in Edinburgh by this time -- so much so, in fact, that both the medical and the arts students at the Edinburgh College complained of a bias in the curriculum in favour metaphysics.[cxcii] Local literary societies, such as the Royal Society of Edinburgh, were now open to members of the business community and the class of literary gentlemen. When the Royal Society of Edinburgh met for the first time under the terms of its royal charter on June 23, 1783, its membership was drawn from the Philosophical Society of Edinburgh, but provisions were immediately made to extend the membership to members of the legal community and the gentry at the first meeting of the society. As the society unanimously resolved, 'That the Lords of Council and Session, the Barons of the exchequer for Scotland, and a select number of other gentlemen, should be invited to a participation of the Society's labours.'[cxciii]

A further consideration to keep in mind when considering the education of Mary Primrose is that the emergence of a culture of letters within aristocratic circles was not confined to the male sex. Pioneers of educational reform such as Hannah More had promoted Liberal philosophies of education, and Britain had witnessed the emergence of a radical group of liberated, educated women known as 'blue-stockings'. These ambitious women had prevailed in the first half of the eighteenth century, and were called 'blue-stockings' because they shunned all form of ornamental attire and entertainment in favour of simple dress and serious-minded soirées.[cxciv] The blue-stockings took what was then considered a radical approach, although they did not aspire to scholarship in the same way as Mary Primrose, and were often derided, even by

proponents of educational reform. In spite of negative appraisal, the Bluestockings had an impact. It was thanks in part to such efforts that liberal views of education grew increasingly popular. While employed in Edinburgh as a tutor from 1798 to 1803, Reverend Sidney Smith noted that the predilection for metaphysics in Edinburgh's fashionable circles had extended so far as to include women. As Sydney Smith remarked of Edinburghers, 'They are so imbued with metaphysics that they even make love metaphysically. I overheard a young lady of my acquaintance, at a dance in Edinburgh, exclaim, in a sudden pause of the music, 'What you say, my Lord, is true of love in the *aibstract*, but --"here the fiddlers began fiddling furiously, and the rest was lost.'"[cxcv] By 1804, when Sydney Smith had moved to London, scores of women were in attendance at his public lectures on moral philosophy. According to one observer, Sydney Smith 'cultivated the good opinion of the fair sex by warmly complimenting them on their natural talents and by urging them to devote themselves to substantial literary studies.'[cxcvi] Still, it was not until the end of the nineteenth century that women began to apply themselves to literary studies in earnest, and to fight for the right to gain regular admission to the universities and to receive degrees. So despite the tendency toward educational reform, Mary Primrose's scholarly interest and the level of intellectual development was both precocious and rare in the late eighteenth century Scotland. [cxcvii]

It remains difficult to get a clear and consistent picture of the extent and quality of the education available to most girls in eighteenth century Scotland, although it is evident that Mary Primrose's educational experience was the exception rather than the norm. Like her contemporaries and neighbours, Mary Primrose's philosophical development was influenced by the by the culture around her and by the then legendary moderates of late eighteenth century Edinburgh. Along with liberal ideological views, came a more open culture -- one that fostered liberal ideals. It seems reasonable to suppose that Mary Primrose's unusual opportunities for academic development were positively influenced by the intellectual flourishing in late eighteenth century Edinburgh. However, it is well to remember that limitations in subjects crucial to higher learning were frequently imposed, and it is perhaps safest to say that educational opportunities for women in eighteenth century Scotland were varied.[cxcviii] One way or another, Scotland's relative stability and cultural climate enabled at least a few women, such as Mary Primrose, to overcome the barriers to higher education facing so many of their sex.

* * *

As Mary Primrose approached young adulthood, Scotland had settled into a comfortable period of cultural flourishing and economic growth. It was, by all accounts, the golden age of the Scottish Enlightenment. During this period of cultural growth, Edinburgh's moderate professors and men of letters formed a nucleus of church, government, and university leaders. Ideologically, these moderates presented what would be considered a 'liberal' stance -- one based on compromise between the opposing tendencies of ruling interests. They advocated greater freedom of conscience, increased liberties for all, and conciliation in the face of controversy. However, very gradually, the power of this ageing generation of moderates began to wane and attempts were subsequently made to unsettle the relative stability of Edinburgh society. And, as Mary Primrose entered young adulthood, conservative elements in the local culture attempted to upset the passing of the torch from an older to a younger generation of moderate leaders.

William Robertson, one of Hume's supporters, was the acknowledged leader of the older generation of moderates. As 'moderates', Robertson and his followers defended enlightenment ideals such as personal freedom of conscience, supporting, for example, Hume's right to philosophical expression. At the same time, they rejecting the claim that Hume's doctrine led to

atheistic conclusions. These moderates, Robertson, along with associates such as John Home, Hugh Blair, Adam Ferguson, and Alexander Carlyle, 'esteemed a rational, polite form of Presbyterianism that would bridge the gap between John Knox and David Hume, between fanaticism and infidelity, between tradition and modernity. They emphasised the moral lessons of Christianity within a thoroughly Presbyterian framework and remained loyal, active members of their national church despite their other interests and activities.'[cxcix] Under Robertson's administrative leadership as Principal of Edinburgh College and head of the affiliated Presbytery, the town grew increasingly independent, secular, and tolerant.

It was not simply the moderate party's enlightened vision that held appeal; for the party's leader, Robertson, was skilled in averting conflict. In the years following the Hume controversy, Robertson arranged things so that most of the chairs established at the College were in the sciences -- a domain not generally thought to require theological advice.[cc] In consequence, the *avisamentum* -- by now regarded as a political instrument used for excluding or including candidates connected with one political party or another -- was infrequently exercised and duplication of the Hume affair was forestalled. Nor did Robertson insist on the formal Westminster Confession of Faith, the oath of allegiance to the Presbyterian Church traditionally required of incoming candidates. Robertson's resistance to the Confession of Faith was not appreciated by religious conservatives: 'This test was constantly evaded in the University of Edinburgh, and notably so from the commencement of Robertson's Principalship (1762), but it still existed as part of the law of the country.'[cci] Such rumblings aside, moderates continued to hold sway in Edinburgh.[ccii] Indeed, Robertson knew how to handle controversy. He encouraged off-campus forums for controversial debate and discussion. Numerous literary and intellectual societies sprang into existence in Edinburgh, including, among others, the Select Society, the Philosophical Society of Edinburgh (which later became the Royal Society of Edinburgh), and the Pantheon Society. With the leadership of local intellectuals such as Hume, Carlyle, Ferguson, Smith and others, these societies were much in demand. As Hume wrote to Allan Ramsey, founder of the Select Society, 'Young and old, noble and ignoble, witty and dull, all the world are ambitious of a place amongst us...'.[cciii] Since these literary societies were technically independent of the College, campus affairs could unfold more smoothly. In sum, Robertson succeeded in drawing lines between institutional norms and civil freedoms in a way that appealed to the better judgement of his contemporaries. Thus, Robertson and his circle of exerted an influence that established and promoted a healthy and tolerant culture and community as befitted the standards of the day.

By the time that Mary Primrose had reached young adulthood, many of the social and literary clubs of the older generation were either folding or beyond the point revival. As Walter Scott remarked, the old guard resembled ghosts 'sitting on their midnight tombs' occupied with 'deeds they have done and witnessed while in the body'.[cciv] The new generation of literati was represented by a vibrant and diverse group, including not only clergy and professors, but also, a substantial number of secular-minded lawyers, men of letters, and merchants. They were all, by-and-large, students of William Robertson and his successor, Dugald Stewart. With few exceptions, they had thoroughly adopted liberal enlightenment ideals. Their professors had encouraged them to pursue scholarly interests and to keep apace of new developments in their areas of interest. The cumulative effect of their education and cultural context was an increased appetite for civil and intellectual freedom. Thus, as the older generation gave way to the younger, the complexion of the city and its leadership became more secular and libertarian. These increasingly secular, and in some respects, radical moderates, had studied enlightenment philosophy and grappled with social and intellectual questions at an ideological level. They were quick to rise to the defense of personal and civil rights, and, to extreme conservatives, were seen as excessively radical.

Tensions between conservatives and moderates were exacerbated by fears of social unrest in Continental Europe. Britain now looked to events on the Continent with horror, witnessing the overthrow of the French monarchy and nobility, and the beginning of Robespierre's 'reign of terror'. Extreme conservatives pointed the finger at 'dangerous ideologies' and urged that unrest and infidelity witnessed on the Continent might soon take hold closer to home. For example, it was suggested that German *illuminati* had 'conspired to overturn the religion and government of their country, and who were to prepare their way by seizing on the Universities, and excluding Clergymen from the places of trust and influence which they occupied in those seats of learning...'.[ccv] Thus, the conservative rhetoric urged caution in the face of dangerous political and religious ideologies, returning to the age-old themes of pernicious intellectual influences on civil order.[ccvi] As late as 1788, Professors Stewart and Gregory declined to publish their papers on cause and effect in the Transactions of the Royal Society of Edinburgh. Stewart's official reason was the connection between the paper and others that 'he did not chuse to publish at present'.[ccvii] Dr Gregory simply stated that 'he did not incline, that either the Essay itself, or any abstract of it, should appear in this volume of the Society's Transactions.'[ccviii] Although it is not made explicit, it seems likely, given the politics of Hume's doctrine of cause and effect in Edinburgh, and the growing fear of social unrest, that neither individual wished to risk public censure as a result of speculation on such a 'dangerous' subject. Further evidence of the growing instability of the political climate in Edinburgh can be found in an edited collection entitled *Essays and Treatises On Moral Political and Various Philosophical Subjects*, published by a German visitor to Edinburgh, some forty-five years after the Hume scandal. The visitor, Willich, reflects on the ongoing persecution of Hume and his followers. 'Hume's scepticism', he comments, 'seems to be the favourite and inexhaustible topic, on which our modern champions of orthodoxy still insist.' But 'these modern practitioners' he continues, are 'more attentive to the cant of their profession, than observant of the spirit of Christianity' and 'betake themselves but to invective, personal attacks, foul aspersions and declamation, instead of argument.'[ccix] Let people alone, Willich pleads, 'if they have talents, if they show a spirit of profound and new inquiry, in a word, if they possess but reason, which always gains'. For otherwise, 'if ye call out high treason, call together, as if by alarmbell, the commonwealth, which by no means understands such subtile elaborations, ye render yourselves ridiculous.'[ccx] Willich, in fact, quite openly condemns Scotland's tradition of persecution, saying that 'men of candour and discernment look upon it as disgraceful, not only to sacred offices, but to the rank in society of men of letters'.[ccxi]

And so it was that the golden age of the Scottish Enlightenment came to a close, with a new generation of moderates struggling to affirm moderate values. The first of the many challenges faced by this younger generation began even while they were still in their student days at Edinburgh College. At about this time, the voice of political disaffection was taking hold quite widely in Britain, and conservatives were railing against the dangers of texts such as Thomas Paine's, *Rights of Man* -- a critique of Britain's monarchy and government that seemed to pose a significant threat to the status quo. Existing social tensions at home and abroad were further complicated by rapid economic and social change; in particular by the land reform movement and the Industrial Revolution. At this time, the circumstances of the wealthy landed families in the Edinburgh area, with their carriages, servants, and luxuries, stood in stark contrast with the conditions of the poor. Indeed, Scotland was not a wealthy country by European standards, and the lives of most parish residents were grim in comparison to those of the wealthy. In the eighteenth century, Scottish landowners took measures to consolidate their estates, turning large portions of land to pasture and wood lot, and Scotland's rural parishes entered a period of transformation. One of the direct consequences of the land enclosure movement was that rural parishes experienced significant reductions in population. The population of Dalmeny dwindled from 1300 in 1750 to 900 in 1790 and then 765 in 1801.[ccxii] As Dalmeny Reverend Thomas

Robertson speculates, the 'depopulation appears to have been occasioned solely by one large district having been turned from tillage into pasture. This tract may consist perhaps of 1500 acres, upon which formerly, it is said, were fifteen or sixteen farmers; at present, and for some time past, there has not been one.'[ccxiii] Thus, the land enclosure movement increased the discrepancies between landowners and their tenants. Local farmers had long lived from hand to mouth, with half of their wages paid in oatmeal, a small house and garden, the carriage of coal, and some food at the harvest. 'The people's diet was rather plain, consisting of oat-meal porridge, oat-cakes, pease-bannocks, barley broth, vegetables, potatoes, butter-milk and water while some were beginning to eat wheaten bread and drink small-beer. Very little meat was eaten and for luxuries there was tea and whisky.'[ccxiv] With the land enclosures, even this meagre fare was out of reach for many of those who had previously worked the land. Paine's work gave voice to the injustice of the conditions and circumstances of the lower classes, a development to which many among the well-to-do objected.

The contrast in the social circumstances of the rich and the poor must have been striking. As the poor struggled to find adequate food and shelter, the rich enjoyed their luxurious surrounding and indulged refined tastes. By the late eighteenth century, Edinburgh was replete with the societies and soirées of a new and younger generation. Local personalities, some of whom were brilliant intellectuals, congregated at the homes of socialites such as Mrs. Fletcher and Mrs. Apreece. The Primrose family is likely to have shared in the extravagant parties and excitement of Edinburgh's fashionable circles. There, they would have met up with luminaries of all political stripes, including Walter Scott, John Allen, Francis Jeffrey, Henry Brougham, John Playfair, Thomas Brown and James Pillans.[ccxv] Included in the group were the liberal Whigs who would go on to form the *Edinburgh Review*, in its day touted as the most important critical and literary journal in Europe. It is impossible to say with certainty whether Mary Primrose and her siblings attended many of the Edinburgh's soirées, although it seems likely that they did. For, Mary Primrose was acquainted with many of the same individuals in adulthood, and entertained them in her own home in London. It should be noted, however, that her father, Neil Primrose, was a frugal man, and this may well have limited the family's participation.[ccxvi] The family circumstances may have placed modest limitations on the social life of the children; however, they were certainly well off by local standards, and Neil Primrose's eccentricities would have been more of an embarrassment than an impediment. Thus, there would likely have been parties and gatherings, and on such occasions, the Primrose family would have enjoyed fine conversation, dancing, perhaps a toast or two, and some of Scotland's culinary delicacies. But the conversations at Edinburgh's parties were notoriously intellectual, and it is doubtless there that attitudes and controversies on social issues were explored.

To the more conservative elements of the society, namely, to those who stood to lose the most if the revolutionary spirit took hold in Britain, social critiques such as Paine's presented a terrifying call to address social injustices. Among the many angry reactions to Paine's *Rights of Man* was an anonymous letter published in Scotland in 1792. In this case, the author's anger betrays a deep underlying fear of civil unrest. Against Paine, it is argued, *ad hominem*, that, 'For an itinerant political quack to pretend to more sound sense and judgement than all the inhabitants of the British isles put together, and to dictate his own fanciful form of government to them, is in the highest degree assuming'.[ccxvii] The author goes on to insist that a good citizen would petition Parliament rather than 'rouse a mob'. For, 'A man who endeavours to rouse a mob, is of all men the most dangerous to society; -- he must either have interested views, be mad, or infamously wicked.'[ccxviii] And, like this anonymous letter writer, Edinburgh's older generation of moderates grew more conservative in the face of social unrest. For example, the then Professor of Moral Philosophy, Dugald Stewart, endeavoured 'to show that a zeal for liberty could be combined with a philosophically and religiously safe stance.'[ccxix] As Stewart explains in 1792, the need for

limitations on political liberty in light of the 'reckless boldness of the uncompromising freethinker' and the dangers of civil unrest,

> The danger with which I conceived the youth of this country to be threatened by that inundation of sceptical or rather atheistical publications which were then imported from the Continent, was immensely increased by the enthusiasm which, at the dawn of the French Revolution, was naturally excited in young and generous minds. A supposed connection between an enlightened zeal for Political Liberty and the reckless boldness of the uncompromising freethinker, operated powerfully with the vain and the ignorant in favour of the publications alluded to.[ccxx]

Thus it was that the moderate leaders of Edinburgh, after what we might consider a rather conservative fashion, advocated a restricted form of liberalism in the 1790's. Fear of the revolutionary forces prevailed throughout Britain, and many of the nation's wealthy young men were sent to be educated by professors such as Stewart in Edinburgh in lieu of a 'Grand Tour' of Europe. Yet, for all of its enlightenment culture, fears of social unrest soon led to inevitable, painful reverberations. The call for increasing conservatism was soon followed by seemingly 'justifiable' cases of persecution and bigotry. Over the decades, opposing parties would engage in a bitter leadership contest in Edinburgh, and liberal values would increasingly become a focal point in the public debates of the town.

Given the Primrose family's ties to the local community, it is almost certain that Mary Primrose would have known about the local public controversies.[ccxxi] One such controversy, which involved the Select Society, became notorious, in part because it was brought into focus a significant shift in the values of an older generation and new generations of liberal and conservative lawyers. The events around this controversy began to unfold in 1798. On one account, the controversy, which is reported to have involved 'attacks on Christianity' and to have been 'connected with revolutionary principles' is explained away as a natural outgrowth of political concerns linked to the French Revolution. For, 'The Society, like everything else in the country, was affected by the white heat of political passion generated by the French Revolution.'[ccxxii] Other accounts, such as those given by Henry Cockburn and Francis Jeffrey, link the Select Society controversy more directly to local politics and to the issue of freedom of debate. According to this report, the question under debate was 'Have the States of Europe any reason to dread the increasing ascendancy of Russia in the balance of power?', a topic to which conservative members of the society objected, on the grounds that it contravened a 1794 resolution against topics relating to political questions of the day.[ccxxiii] [dig deeper - the accounts conflict] To this, the response on the part of the younger generation was to rescind the motion of 1794, on the grounds that it was an attempt to restrict the 'freedom of debate'.[ccxxiv] When the controversy arose over the resinding of the 1794 motion, religious questions were unfairly implicated in the controversy:

> Since it was enacted, not a single question has ever been appointed, or an essay delivered, the discussion of which led either directly or by the most remote allusion to arguments or topics of a theological description.[ccxxv]

As a show of sincerity, the new motion was itself repealed and 'a positive law substituted in its place against all religious and political discussions.[ccxxvi] Thus, the incoming moderates were thus quite regrettably reduced to 'the necessity of deploring those misconceptions which we have done everything in our power to obviate and correct.'[ccxxvii]

Thus it was that the incoming generation of moderates was temporarily silenced. Whatever

tolerance existed for free speech and debate was further limited, and hampered by conservative appeal to political instabilities in Europe. Fear of civil unrest bred a fear-mongering rhetoric that promised social disaster as a natural culmination of free speech. Free speech might well be appropriate for back-room, closed-door discussions, but it was inappropriate in such an 'open' political forum. Edinburgh intellectual society was abuzz, but the object of the rich and the powerful conservatives was to contain that buzz, and to delimit the appropriate questions for public debate and discussion.

* * *

In spite of, or perhaps because of, the controversies around her, the young Mary Primrose became very interested in religious, philosophical, and political matters. Indeed, it was in this context, with political anxieties renewed to full pitch in Edinburgh and the influence of the ageing moderates on the wane, that Mary Primrose turned to the development of her own views on the leading debates of her day. Between the ages of 17 and 27, Mary Primrose's inquisitiveness led her to write numerous manuscripts 'full of metaphysical disquisitions, exposing errors in the reasoning of Hume's atheistical treatises, and the unitarian doctrine of the then new philosopher, Priestley'.[ccxxviii] Whatever their analysis, Mary Primrose's youthful essays were likely a response to the philosophical issues and the personal difficulties that she encountered in Edinburgh and area.

The significance of Mary Primrose's scholarly achievements cannot be appreciated apart from the historical context of the people, institutions, and ideologies that shaped her world. The ongoing tradition of political and religious rivalry and persecution, its particular history in Dalmeny, and the situation of Primrose family in respect of all of this, would permanently shape and direct Mary Primrose's outlook on life. The question that arises for us is that of where Mary Primrose drew the line between fealty to tradition and authority and the more liberal ideals of moderatism. In certain respects, it is evident that she held that Hume was in error, but the evidence suggests that she held high the ideal of freedom of conscience, and felt that Hume's error was in fact an analytical one. However, without access to Mary Primrose's 'metaphysical disquisitions', it is impossible to guess at the specific criticisms they contained. However, the subjects of the essays provide contextual help, for they suggest certain books and doctrines as targets of her critical assessment.

Hume's 1748 *Essay on Miracles*, for example, criticised revealed religion on the basis of an analysis of the evidence that could be garnered from experience. Experience, Hume argues, as recorded through history, reveals to us a natural order, and additionally, the testimony of those who are witness to miracles. Unfortunately, experience also shows that such testimony can be mistaken, fallacious, unreliable, and so on. In fact, Hume maintains, it is more probable that the witness to a miracle was deceived than that the natural order was violated by a miraculous event. Hume's *Natural History of Religion* was a similarly shocking in its day. It offered an historical analysis of the origins and development of religion and religious beliefs, but in a style that diminished and ridiculed religious traditions and theology. Hume noted the way in which 'primitive peoples' formed beliefs to explain natural phenomena that was not well understood, and exposed the ludicrousness of some of such beliefs. At the same time, he praised the tolerance and diversity of polytheistic traditions, which he set in stark contrast to intolerant monotheism. In the end, he pronounces religion to be irrational, and suggests that, like other beliefs that are unable to withstand the scrutiny of critical and historical analysis, it should eventually be eliminated altogether. Though the above criticisms would surely have been sufficient to do the job, Hume's atheistic reputation was firmly cemented by his damaging

critiques of the argument from design in his *Dialogues concerning Natural Religion*. There, Hume considers the design hypothesis, and specifically the argument that the claim that the hypothesis that the universe was designed by an intelligent Deity is better able to account for the appearances of nature than any alternative hypotheses. In Hume's day, people thought that they had a great number of experiences of design and many claimed to have experiences of God's design arising from the 'vegetable principles' or life forces. The idea was that such forces were products of minds or souls embodied in matter, and that such forces could be detected in phenomena. Hume argued that such beliefs have no adequate grounding, and that appearances are in fact inadequate to give us good reason to choose the design hypothesis over rival hypotheses. Indeed, the most that an appeal to nature can possibly tell us, he thinks, is *'That the causes of order in the universe probably bear some remote analogy to human intelligence*'.[ccxxix] However, such a view has no special existential implications for God. For 'We ought not to hold a strong belief in the existence of a certain cause if that cause only imperfectly resembles other causes of similar effects or if the effects of that cause only imperfectly resemble the effects we observe to follow from other causes of that kind.'[ccxxx]

Joseph Priestley's works would also have been shocking, not only because Priestley shared many of Hume's views on religion, but also because he touched on some of the most sacred and central doctrines of Christian dogma and ritual. In the 1780's, Priestley's published his *The History of the Corruptions of Christianity* and *History of Early Opinions Concerning Jesus Christ.* There he argued that the doctrine of the Trinity was not in fact a tenet of the primitive church and that worship should proceed without elaborate ceremony or dogma. Priestley's view was in fact very liberal in its interpretation of salvation and emphasised tolerance for different ways of seeking God; yet, it posed a challenge to traditional religion and to the requirement of conformity to the Anglican Church of England. In addition, Priestley's works criticised doctrines such as the virgin birth, and it became commonplace to regard Priestley as an atheist. Although it is impossible to know the specific points taken up against Hume and Priestley in Mary Primrose's early 'metaphysical disquisitions', it seems likely, given the tenor of her mature work, that she set out to defend theistic doctrines against the criticisms of Hume and Priestley.

With a freshly educated, more radical generation of intellectual aristocrats on the rise, yet another political and religious struggle would come to hold the attention of Edinburgh. The episode concerned the suitability of John Leslie as candidate for the Chair of Mathematics at the University of Edinburgh. The Leslie affair was directly and explicitly linked to both the Hume controversy and fears of civil unrest in Europe. Unlike the case of Hume, which was in many respects a back-room affair, the Leslie episode was played out in the public eye. As we shall see, the events and discussions arising in connection with the Leslie episode would profoundly influence the direction of Mary Primrose's philosophical writing. For, this time, many of those who frequented Edinburgh's most fashionable and literary circles, including Mary Primrose, would jump into the fray.

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In looking back on the Scottish heritage of Mary Primrose, it is evident that few personal details concerning Mary Primrose's early life have survived and that the better part of her youth remains a mystery. However, what is known of her adult life and interests suggest that Mary Primrose's early years in Scotland, her family heritage, and the Scottish Enlightenment were all important influences. To better understand Mary Primrose and her work, we next turn to the controversies relating to John Leslie, but before we do, we should take a moment to reflect on how Mary Primrose's own narrative emerges as part of the larger historical context of her ancestors and her social milieu.

By the end of the eighteenth century, the rise of the Primrose family, which began with service to King James VI and support for Stuart ideals, was no more than a fading memory. The basis for a genuine form of moderatism was inadvertently introduced in Scotland through innovations to the professoriate and the college curriculum. The golden age of moderatism, which began in the mid-eighteenth century, was characterised by an allegiance between Hanoverian and Presbyterian leaders. There were very definite limits to this form of moderation espoused at this time; while the ideal of freedom of conscience was one thing, its application in real life was quite another. As the times changed and grew unstable, moderate ideals came to sound more conservative, and the struggle to defend political ground grew more intense. It is the story of Scotland's struggle for moderatism that forms the most significant boundary to the world from which Mary Primrose, the philosopher, emerged.

The Town and Gown Politics of John Leslie

2.1 Dangerous Philosophy

By 1824, Mary Primrose had anonymously published *An Essay upon the Relation of Cause and Effect,* and was known under her married name of Mary Shepherd. The book is best understood in connection with a specific episode in the history of Edinburgh. The episode was the election of John Leslie to the Mathematical Chair at the University of Edinburgh, an election that gave rise to considerable controversy.[ccxxxi] The events in question took place in 1805-06, and they echoed an earlier controversy in 1744-45, regarding an appointment sought by David Hume. In both instances, the Ministers of Edinburgh exercised their right to be consulted in the appointment, a peculiar right of *avisamentum*, originally conferred by King James VI. The *avisamentum* is nothing more than the right of the Ministers of Edinburgh to offer advice to the Magistrates and Town Council on university appointments. However, the circumstances under which the right had been conferred had invested it with considerable authority, and until the mid-eighteenth century, the right of *avisamentum* was undisputed. The appointment sought in the case of Hume was in the area of moral philosophy, an area where the advice of the Ministers of Edinburgh would carry considerable weight. As it happened, the testimony was unanimous against Hume and his 'dangerous philosophy', and the Ministers of Edinburgh were widely regarded as having influenced the Town Council to prevent his appointment.[ccxxxii] Indeed, Hume and his philosophy would continue to raise the ire of the Presbyterian Church for years to come. Ten years after the initial controversy, the General Assembly once again had occasion to reiterate its unanimous censure of Hume's philosophy, issuing a 'warning against the infidel principles of Mr Hume'.[ccxxxiii]

Hume's exclusion from university office was personally devastating, and the stigma of infidelity remained attached to his name. Despite this, and in a strange way, both Hume and his philosophy became part of the very fabric of Edinburgh. In defiance of public censure, many of Scotland's professors taught Hume's philosophy in the universities. Hume, it will be recalled, proposed that the causal relation is a subjective fiction supplied by the mind that derives necessity neither from experience nor reason. Since knowledge of causality is central to proofs for God's existence, Hume's questioning of the causal relation was seen as an implicit critique of theism. As such, his doctrine was regarded as pernicious. Apart from Thomas Reid in Glascow, and later, as expositor of Reid, Dugald Stewart in Edinburgh, few academics were brave enough to teach Hume in Scotland's universities. Reid and Stewart were apologists for Hume, arguing that his premises were quite correct, but that Hume's interpreters had been mistaken in their inferences to sceptical and atheistic conclusions. But Hume's influence did not stop there. Hume was also an intimate of the moderate leaders who influenced Edinburgh society in the decades between 1740 and 1790. Through connections to Edinburgh's moderate leaders, and Hume's involvement in the literary societies of Edinburgh, there grew to be an underlying interest in Hume and his work that would keep his doctrines alive and well long after the academic scandal had blown over.

One of Hume's supporters was William Robertson, the acknowledged leader of the moderate party. Under Robertson's influence as Principal of the University of Edinburgh and head of the affiliated Presbytery, the University of Edinburgh became increasingly independent, secular, and tolerant. It is interesting to note, for instance, that in the years following the Hume controversy, most of the university chairs that were established were in the sciences, a domain not generally thought to require theological advice.[ccxxxiv] The practice under Robertson seems to have been to shift people around within the university in order to prevent the exercise of the *avisamentum*. When a humanities position opened up, it was filled internally, so that the vacant position would

be in the sciences. As a result, the *avisamentum* -- by now regarded as a political instrument for excluding or including candidates connected with one political party or another -- was infrequently exercised. Moreover, Robertson did not insist on the formal Westminster Confession of Faith, the oath of allegiance to the Presbyterian Church traditionally required of incoming candidates.

Hume died in 1776, and by the early 1780's, the moderate clergy and professors who had worked to promote tolerance and to defend Hume were nearing retirement. Through death, retirement, and infirmity, the influence of the old guard began to wane. When Robertson decided to retire, he gave the official nod to the younger, incoming generation by supporting the candidacy of Andrew Dalzell as Clerk to the General Assembly of the Church of Scotland. At this point, the social and literary clubs of the older generation had either folded, or were beyond the point revival. As Walter Scott remarked, the old guard resembled ghosts 'sitting on their midnight tombs' occupied with 'deeds they have done and witnessed while in the body'.[ccxxxv] By way of contrast, the incoming generation of moderates was a vibrant and diverse group. This new generation included not only clergy and professors, but also a substantial number of lawyers, men of letters, and merchants. They were by and large the students of Robertson and his followers, and with a few notable exceptions, had been thoroughly imbued with secular and liberal enlightenment ideals.

As the older generation gave way to the younger, the complexion of the city and its institutions became more secular than ever. The increasingly secular, and in some cases, radical elements in the moderate party, gave rise to fresh controversy in Edinburgh. The incoming moderates were less conciliatory. They had studied enlightenment philosophy, and had grappled with social questions at an ideological level. They were quick to rise to the defense of personal and civil rights. Given the general societal shift away from church to economic and secular power, and the influx of professional men into the moderate ranks, these young moderates were coming to exert even greater control over Scotland's governing institutions. This was true not only of the General Assembly, the University of Edinburgh, and the Town Council, but also of the local literary societies. The Royal Society of Edinburgh, for example, met for the first time under the terms of its royal charter on June 23, 1783. Formed from the membership of the Philosophical Society of Edinburgh, and provisions were made to extend the membership to members of the legal community and the gentry at the first meeting of the society. There, it was unanimously resolved, 'That the Lords of Council and Session, the Barons of the exchequer for Scotland, and a select number of other gentlemen, should be invited to a participation of the Society's labours.'[ccxxxvi]

To conservative members of the Church of Scotland, loss of influence led to bitterness, particularly since many within the ranks of the Established Church had also adopted the secular ideals of the moderate party. At the same time, there were fears that unrest and infidelity on the Continent might take hold closer to home, fears that were strongly encouraged by the city's conservatives Ministers. According to one Minister of Edinburgh, the German *illuminati* had 'conspired to overturn the religion and government of their country, and who were to prepare their way by seizing on the Universities, and excluding Clergymen from the places of trust and influence which they occupied in those seats of learning...'.[ccxxxvii] Thus, the conservative rhetoric urged caution in the face of dangerous political and religious ideologies. It may have been that this sort of rhetoric contributed to the decisions on the part of Professors Stewart and Gregory to decline to publish their papers on cause and effect in the 1788 Transactions of the Royal Society of Edinburgh. Stewart's official reason was the connection between the paper and others that 'he did not chuse to publish at present'.[ccxxxviii] Dr Gregory simply stated that 'he did not incline, that either the Essay itself, or any abstract of it, should appear in this volume of the

Society's Transactions.'[ccxxxix] Although it is not made explicit, it seems likely, given the politics of Hume's doctrine of cause and effect in Edinburgh, and the growing fear of social unrest, that neither individual wished to risk public censure as a result of speculation on such a 'dangerous' subject.

In view of the rising fear of social unrest, the ongoing censure of infidels, and the threat presented by the complexion of the incoming generation of moderates, the fact that Leslie's candidacy for the Mathematical Chair in 1805 gave rise to an *avisamentum* is not entirely surprising. The vacancy in 1805 was in the sciences, but Leslie had written a footnote concerning Hume's doctrine of causation, a subject that was, according to the Ministers of Edinburgh, central to theism:

> ...Mr Leslie, having, along with Mr Hume, denied all such necessary connection between cause and effect, as implies an operating principle in the cause, has, of course, laid a foundation for rejecting all argument that is derived from the works of God, to prove either his being or attributes.[ccxl]

The main tactic of the Ministers was to charge that Leslie's footnote was an open endorsement of atheism, an endorsement that justified the need to exercise of the *avisamentum*. The Professors of the University of Edinburgh questioned the right of *avisamentum*, and several ministers expressed concerns about the 'proper extent' of this right.[ccxli] The attack on Leslie was, according to Dr Hunter, Professor of Divinity, personally devastating. 'He was represented, in the church courts, and even in the public newspapers, as hostile to religion, and as an abettor of atheism, and as having carried the sceptical tenets of Hume further than Hume himself.'[ccxlii] Those ministers most vocal in their opposition to Leslie were charged by Dugald Stewart, Professor of Moral Philosophy, with exhibiting 'an unbecoming zeal' and as 'tending to persecution'. But, as John Inglis, Minister of Edinburgh, bitterly retorted, the so-called moderates of the professoriate had not always been complacent when it came to the philosophy of David Hume. For '*Campbell*, and *Gerard* and *Reid*, were not afraid that they should be accused of a zeal unworthy of *genuine moderation*, in withstanding the philosophy of Mr Hume.'[ccxliii]

The dispute was also tied to practices and policies relating to university appointments. There was open disagreement, for example, over the neglect of the Westminster Confession of Faith. As one Minister complained, Dugald Stewart 'makes no secret of his thinking it very wrong and injurious to the interests of Literature, that Professors should be required, in any way, to express their adherence to the standards of a National Church.'[ccxliv] It is well known, he continues, 'that by the laws relating to Universities, both in England and Scotland, men of talents must, sometimes, be excluded from offices, for which they are well qualified in respect of literature. There have been learned Presbyterians, who would have done honour to an English University, as well as eminent Episcopelians, who would have adorned our seats of learning in Scotland.' Moreover, 'The Clergy, connected with *Oxford* or *Cambridge*, would probably feel not a little *surprised*, were any man to propose officiating as a Professor in one of those Universities, without subscribing the Thirty-Nine Articles of the Church of England.'[ccxlv] And so it was that in 1805, the Presbytery met to discuss the Westminster Confession of Faith. As the Ministers of Edinburgh claimed, 'for many years past the members of the University of Edinburgh have not been in the use of complying with those Acts of the Parliament of Scotland, by which they are expressly required to acknowledge, profess and subscribe, before this Presbytery, the Confession of Faith...'.[ccxlvi] Thus, the Leslie affair, like the Hume controversy, was tied to local political and power struggles.

The conservative Ministers of Edinburgh did not turn university politics into the central issue of

the debate. Rather, they drew the public's attention to the *avisamentum*, and to their charge that Leslie, as a supporter of Hume, was an infidel. To many in Edinburgh, the Leslie affair quickly became an unpleasant reminder of the Hume episode. In both cases, the central issue before the public was Hume's doctrine of cause and effect. The conservative Ministers of Edinburgh saw their role as one of 'guarding the entrance to those academical chairs from which the youth of the land receive their instruction' and preventing 'false philosophy' from 'subverting the foundations of the Christian faith, and, by consequence, the foundations of civil society'.[ccxlvii] With charges such as these pending, the 1805 controversy created a local sensation. As Mr Gillies remarks, 'Mr Hume's Essays have been, for some time, in a great measure neglected and forgotten. The zeal of these reverend gentlemen is calculated to recommend them to renewed and increased attention.'[ccxlviii] Indeed, it is evident that the public attended the General Assembly meetings held in connection with the Leslie affair, since it is remarked in the minutes that 'strangers should not in future be admitted without tickets'.[ccxlix]

The interchange between the Ministers and Professors of Edinburgh offers a glimpse at the tensions arising in connection with the growing influence of the new generation of moderates. Reverend John Inglis, leader of the conservative opposition to Leslie, would advance values directly opposed to both generations of moderates. For the conservative Ministers of Edinburgh, there was little hope of any gaining political ground without a fight, and so they proceeded with the *avisamentum*, with various publications, and with a General Assembly debate through which Leslie was unofficially put on trial before the whole of Edinburgh. In the end, the Leslie affair would serve to solidify the transition of power from the old to the new generation of moderates. But the contest was not easily won, and as part of the episode, Edinburgh witnessed the development of new battle lines in which members of the Episcopal elite openly united in support of the moderate party against the conservative Presbyterian Ministers.

2.2 Metaphysical Footnotes

The events surrounding the Leslie controversy began to unfold following the death of Professor Robinson. John Playfair, Professor of Mathematics, expressed an interest in the Chair in Natural Philosophy. Upon hearing of this development, a lecturer by the name of Macknight approached Dugald Stewart to indicate his interest in the Mathematical Chair. Stewart's response was that as far as he was concerned, Macknight would have to seriously consider giving up his ministry in order to fulfill the duties associated with the Mathematical Chair.[ccl] Macknight conveyed Stewart's message to the Ministers of Edinburgh, who then began to mobilize against both Stewart and his stated requirement. In the meantime, Professors Stewart and Playfair wrote letters to the Provost, George Baird, regarding the matter of the performance of academic duties while employed in two jobs. Angered by the intervention of Stewart and Playfair, the Ministers of Edinburgh met in February 1805 and resolved to take up the matter of Leslie's candidacy, and a request was made to exercise the right of *avisamentum*, a practice that had been much neglected under Robertson's leadership at the University.[ccli] As letters were exchanged, party lines began to form. The opposing parties began to take steps to secure the position for their respective candidates. John Leslie was the candidate supported by Stewart and his followers; Macknight was the preferred candidate of the Ministers of Edinburgh.

The *avisamentum*, and its connection to Hume's doctrine, quickly became a focus of controversy. Despite Hume's notoriety in Edinburgh, by the turn of the nineteenth century, many prominent theologians, philosophers, and scientists had either explicitly or implicitly adopted Hume's view that causal necessity is not derived from experience. John Leslie, in the footnote remark to his 1804 *An Experimental Inquiry into the Nature and Propagation of Heat,* had taken the additional step of openly admiring Hume's analysis. The context of Leslie's footnote was a

discussion of Newton's speculation on the cause of gravitational effects. According to Leslie, it was an 'evil hour' in which Newton proposed that the material medium of aether, rather than action at a distance, might explain gravitational effects. Subsequent commentators have likewise deplored Newton's remark on aether, especially since it appears to contravene Newton's own methodological principle against introducing more than necessary to explain a phenomenon. As part of his censure of Newton, Leslie invokes Hume's account of causal necessity. The salient extract from the now infamous footnote runs as follows:

> Mr Hume is the first, as far as I know, who has treated of causation in a truly philosophic manner. His Essay on Necessary Connexion seems a model of clear and accurate reasoning. But it was only wanted to dispel the cloud of mystery which has so long darkened that important subject. The unsophisticated sentiments of mankind are in perfect unison with the deductions of logic, and imply nothing more at bottom, in the relation of cause and effect, than a *constant and invariable sequence*.[cclii]

What follows upon the remark on Hume is a rather long and controversial etymological analysis of the word 'cause' in which Leslie characterizes various languages as more or less advanced in connection with their senses and uses of the term 'cause'. The more mythic and poetic imagination, Leslie says, gives anthropomorphic interpretation to the feeling of succession, and this forms the basis of figurative language regarding causation. Sophisticated languages, Leslie maintains, use the word 'cause' to mean antecedence in the succession of events. Leslie's point, apparently, is that philosophy would do well to stick with the latter construction, and abandon the unsophisticated senses. Neither Leslie's digressions on Newton, nor those on etymology, attracted much attention in 1804. However, in 1805, once Leslie had become a candidate for the Mathematical Chair at the University of Edinburgh, his footnote turned into a magnet for an amazing variety of tensions within Scottish society. These tensions were tied to developments in the political, ecclesiastical, and philosophical history of Scotland.

Initially it appeared that the interests of the moderate party would immediately prevail, and that the appointment of Leslie would unfold with only a modest political scuffle. The Ministers of Edinburgh were determined to put up a fight, and so began to prepare a case against Leslie's candidature. They notified Leslie of their intent to submit an *avisamentum* against him just two days in advance of the meeting called for Leslie's election. On the understanding that a letter of explanation would satisfy the Ministers of Edinburgh, Leslie prepared a letter in which he denied ill intent, affirmed his religious principles, and stated that it was never his intention to take up the subject of *metaphysical* causation. According to Macvey Napier, 'Mr Leslie, on being informed of the charge, immediately declared, in a very pointed Letter laid before the junto, that his observations "*referred entirely*" to the relation between cause and effect, considered as an object of *physical* examination.[ccliii] In fact, Leslie explicitly sought to distance himself from Hume. He condemned the 'gros misapplication which Mr Hume has made of these premises, to invalidate the argument for the existence of the Deity', which, he says, it did not occur to him to 'point out in a treatise entirely confined to physical discussions'.[ccliv]

Leslie's letter was duly delivered and read before the Ministers in Edinburgh. Unmoved, the Ministers decided to proceed with their *avisamentum*. In fact, the existence of Leslie's letter of explanation was suppressed; for it was not mentioned to the Magistrates and Council when the Ministers' *avisamentum* was delivered. Not only did the Ministers of Edinburgh ignore and suppress Leslie's plea, they took the view that the letter was intellectually dishonest. They argued that Leslie's letter was

> ...little more than an attempt to deny and misrepresent the obvious meaning of words, as if

> both Mr Hume's doctrine and Mr Leslie's referred merely to physical causes; while every man who reads Mr Hume's Essay in connexion with Mr Leslie's Note, must perceive that their conjoint doctrine upon the subject of causation is placed upon the broadest ground, extending to every thing under the name of cause, in either matter or mind.[cclv]

The *avisamentum* was delivered to the meeting of the Magistrates and Council on the 12th of March, the very meeting where Playfair and Leslie were to be elected. Having considering the *avisamentum*, elections proceeded in favour of Playfair and Leslie. However, it was decided that, owing to peculiar circumstances associated with the Mathematical Chair, which was held jointly with Professor Fergusson, that a formal consultation with Professor Ferguson was required. In the meantime, further angered that their *avisamentum* had not produced the desired effect, the Ministers of Edinburgh pursued the matter in civil court. But the civil court ruled that the *avisamentum* was not a power of veto. By now a fractured group, the Ministers voted 14 to 13 in favour of pursuing the Leslie affair in the General Assembly of the Church of Scotland. In the meantime, Leslie's second election, which was held on March 29, resulted in his re-election to the joint Chair of Mathematics with Ferguson. Although the matter of Leslie's appointment had now been settled, the public tribunal was just beginning.

The main element of Leslie's public trial was the publication of letters, treatises, newspaper articles, and various other materials, all of which came into wide circulation in both Edinburgh and London. The literature produced was voluminous and full of invective. Dozens of publications, clarifications, accusations, and so on, ensued, most of them long-winded and caustic. In May 1805, in two days of debate held in the General Assembly, the whole matter was re-examined from head to toe. The General Assembly debates were well attended, and the proceedings, like many of the publications connected with the Leslie affair, went through several editions. Additional material relating to the case continued to emerge over the next year or so. As the record of publication shows, there were many and varied responses in the footnote dispute. A surprising number of responses were simply mockeries of the whole affair.

The scorning of Leslie's persecution is of interest insofar as it reveals the underlying tensions that led to his ill treatment. The following excerpt from an anonymous poem written about the Leslie episode, opens by conjuring an image of the persecution and hypocrisy of John Knox, thus making the point that religious persecution was alive and well in Scotland:

Once more, John Knox, erect your surly front,
And teach the snarling hypocrites to grunt:
At soaring L****e point your blust'ring thunder,
And plunge him down to hell, and bolt him under!
For, lo the Culprit, with an impious hand,
Spreads hellish doctrine o'er th' ungodly land;
And what, with toilsome care, unwearied Jove
Displays in wrath, or manifests in love,
(And hides in darkness deep the hidden cause,)
Ascribes to *Nature*, and her *General Laws*.[cclvi]

Sadly, the Leslie affair also became the subject of considerable ridicule. As part of the public discussion, there was frequent jibing about the significance of footnotes in scholarship. Numerous texts reserved serious discussion for footnotes, or claimed that the serious discussion had been moved from footnotes, or that an important point would follow in the footnotes, and so on. Henry Erskine, a well-known local wit and highly placed advocate with thirty years experience in the General Assembly, could not resist the following pun relating the

etymology of the term 'metaphysics' to the ongoing *footnotes* controversy.[cclvii] As Erskine remarked, he failed to follow the reasoning of some of his esteemed colleagues. For, 'They have told us, that because the *subject* of Mr Leslie's book is *physical*, therefore the *notes* must be *metaphysical*; that notes make up no part of a book, and have nothing to do with it. This is a discovery equally ingenious and amusing.'[cclviii]

Long after the Leslie affair had come to its conclusion, the derision persisted. The Reverend Sydney Smith, frequent guest among the 'motley company of lawyers, statesmen, critics' at Holland House, persisted in the ridiculing of 'Scotch atheists'. In a state of 'high glee', as one observer noted, Sydney Smith announced to Mr Ward and Mr Allen that 'the best way to keep a merry Christmas was to roast a Scotch atheist, as the most intolerant and arrogant of all two legged animals'. Allen was not pleased, and 'kept clasping his hands together till his fingers cracked' so that Sydney Smith called out 'See! there's one beginning to crackle already.'[cclix] As this incident shows, Scotland's persecutions had become a matter of national ridicule.

Though the Leslie affair did reach comic proportions, the underlying issues were far from superficial. On a more solemn note, Professor Playfair captured the feelings of many in his expression of regret for the underlying social dimension. The reputation of Stewart and others had been stained by the intentional misrepresentation of facts, and the Ministers of Edinburgh had preyed upon renewed fears of social unrest, likening the situation in Scotland to that of Germany, and then laying the blame on philosophy. Playfair sums up his concerns in a moving plea for academic freedom:

> If it was no longer safe, when a work contained in it exceptional doctrines, to express satisfaction with any part of it; if a man must be answerable for all the inferences which the ignorance or ingenuity of his adversaries could draw from his opinions; there was an end of all the freedom of debate, and the truth of any principle was no longer sufficient to give it currency in the world. The days of intolerance were returning: the clouds which we supposed dispelled for ever seemed again to be gathering round our horizon; and we were reminded of the age when the discoveries of Copernicus and Galileo were subjected to the anathemas of the church.[cclx]

In the end, both Hume's doctrine and the issues around academic freedom would get a public hearing. The hearing, which occurred decades after Hume had been laid to rest, occurred as part of the Leslie affair. However, a lasting reminder of Hume's own castigation can be found on his monument in Edinburgh's Old Calton Cemetery. The monumental inscription, presumably the work of the city's Presbyterian Ministers, appears calculated to make Edinburgh's infamous 'Saint David' turn in his grave:

Behold I come quickly
Thanks be to God which
giveth us the victory, through
our LORD JESUS CHRIST.

2.3 Edinburgh Debates the Causal Relation

By 1805, the atheistic implications of Hume's philosophy, the propriety of persecuting individuals for their beliefs, and the right of *avisamentum* were matters of considerable dispute. The *avisamentum* had placed the Leslie controversy on a philosophical footing, charging that Leslie, like Hume, had threatened the foundation for belief in God by denying 'all such necessary connection between cause and effect, as implies an operating principle in the cause'. Given the

history associated with Hume's doctrine in Edinburgh and the seriousness of the charge of atheism, one is led to wonder about the circumstances that could have swayed so many of the Professors and Ministers of Edinburgh to defend Leslie.

For, as the Leslie episode bears testimony, Dugald Stewart and his followers succeeded in defending Leslie against the charges of the 'Protestant Divines' of Edinburgh by establishing the importance of the philosophical quest for truth. And, though Stewart would later regret the philosophical dispute, it was largely his criticism of the Ministers of Edinburgh's charges against Leslie that had initiated the public discussion. In the end, the philosophical question was taken up quite widely. Stewart and his students, writes Inglis, seek to 'contribute to the maintenance and advancement of sound philosophy. They are convinced that the agitation of *this question* ...was essential to that important object.' [cclxi] Thus, in addition to its political dimension and its lighter treatments, Leslie's footnote on Hume was debated on metaphysical and theological grounds. Leslie's case became a testing ground for a protracted and complicated debate that involved a wide spectrum of the Edinburgh community. Numerous philosophical texts, letters, and pamphlets published in connection with the Leslie affair attempted to elevate the controversy, couching censure or approbation in principled and philosophical terms.

One might wonder how a predominantly philosophical debate could have engaged Edinburgh at large. Part of the reason for widespread interest was undoubtedly an attraction for the spectacle of Leslie's persecution. But the philosophical discussion itself extended to university administrators, ministers, lawyers, media contributors, 'tradesmen and their wives', and so on. As one observer remarked, 'The honest tradesman, and his wife, may now be expected to be found poring over the unprofitable metaphysics of Mr Hume, to the exclusion of the 'Spectator' and the 'Rambler'; or, when it shall appear, studying 'A Logical Exhibition of Mr Leslie's Heresy, by the Ministers of Edinburgh'.[cclxii] While this level of public involvement in a philosophical and theological debate might seem strange to the contemporary reader, it is well to keep in mind that the kind of education received in eighteenth century Scotland was quite different from that received today. In those days, every school child was exposed to classical literature through language and religious studies. A solid foundation in the humanities was required of all university graduates, and professionals, merchants, and members of the gentry spent much leisure time in the study of classical literature and philosophy. A culture of letters predominated quite generally in British society, and especially in Scotland, where a single literary magazine such as the *Edinburgh Review* might sell as many as ten thousand copies per month. Thus it was that lawyers such as Henry Erskine were able to craft puns on the etymology of abstract terms such as 'metaphysics' -- puns that the majority of today's university educated would fail to grasp. A fair appreciation and understanding of matters philosophical and theological were thus within the reach of many otherwise quite average citizens, so that even working class men and women could follow the issues in the news, and the Church of Scotland's General Assembly debates attracted a full house. This level of appreciation for philosophy and literature, particularly in the fashionable circles of eighteenth century Edinburgh, could not be matched today.

Another factor that contributed to the interest Hume and his philosophy was the recognition of Hume's contribution on the part of Europe's scholarly community. In the sixty years intervening between the cases of Hume and Leslie, many philosophers had acknowledged the importance of Hume's philosophical work, including the widely admired philosopher, Immanuel Kant. Kant was in fact notorious in England for having been awakened from his dogmatic slumber by Hume. F.G. Born's translation of Kant's *Critique* into Latin, the language of instruction at most universities, made Kant's work more accessible to English readers, most of whom had little or no knowledge of German. In addition, some of the early articles on Kant's *Critique* that had first

appeared in Germany were being reprinted in British journals such as the *Monthly Review*. Interest in the now famous Kant was growing, and between 1794 and 1796, Frederich Auguste Nitsch was invited to give a series of lectures on Kant's philosophy in London. As a former student of Kant's, his aim was ostensibly to give an introduction to Kant's principles concerning man, the world, and the Deity. Less explicit, but no less important, was his ambition to proselytize Kant's philosophical system in the English speaking world, a plan that Kant himself supported.[cclxiii]

As René Wellek notes in his book *Immanuel Kant in England: 1793-1838*, late eighteenth century Edinburgh society also witnessed a sudden interest in Kant. Beginning in about 1792, Walter Scott, William Clerk, William Erskine, Thomas Thomson, John Colquhoun, and others, submitted to German language instruction under a certain Mr Anthony Florian Madinger Willich. Willich's interest in Kant led to a convergence of German and Kant studies.[cclxiv] Edinburgh was considered one of the great centres of learning in Europe, and many young men, including Willich, went to Edinburgh to pursue studies in medicine, law and the humanities. As a former student of Kant's, Willich offered lectures on the German language, supplemented by discussions of Kant's philosophy. In 1798, Willich published two works that were evidently the outgrowth of his lectures; *Elements of the Critical Philosophy*, and *Essays and Treatises On Moral Political and Various Philosophical Subjects*. The former work brought together the historical context of the critical philosophy, the tenets of transcendentalism, a representative selection of short summaries of Kant's epistemological works, and translations of three philological essays. The latter work was also devoted to Kant, covering his moral philosophy and other miscellaneous writings. Willich's *Elements* was criticised as a mere piece of book-making, and a large chunk of the work does appear to be a synopsis of Schultz's German language summary of the first Critique. However, Willich's concise summaries of Kant's texts were a considerable improvement over Nitsch, and better than any other writing on Kant then available to the English speaking world. Willich's descriptions of Kant's corpus would have been very useful to the English reader of his day, for they were arguably the only clear English texts available prior to 1800 that actually summarised the Kantian system.[cclxv]

The most influential works on Kant's philosophy in early nineteenth century Edinburgh were those of Willich (1798), Villers (1801), Brown (1803) and Drummond (1805). The discussion of Kant did not sound very Kantian, and largely consisted in an effort to mitigate in the disputes between empiricism and transcendentalism.[cclxvi] This interest in Kant, and Kant's own interest in Hume, help to explain the attention and seriousness with which Hume's doctrine of causality was now met in Edinburgh. It is true, of course, that Kant's early Scottish critics paid little attention to the details of the critical philosophy. But, what is historically important is that an interest in Kant and in Kant's response to Hume had immediately preceded the Leslie affair, and is likely to have shed new and sympathetic light on Hume and his quest for truth. The Ministers of Edinburgh attempted to turn the local interest in Kant and his response to Hume against Leslie. In sounding the alarm, they claimed that atheism was undermining civil order in Europe, and suggested that the same atheism and unrest might compromise the civil order in Scotland. Fortunately, Hume had also earned admirers closer to home, and as Dugald Stewart established, dozens of eminent British philosophers and theologians had also endorsed Hume's position, whether intentionally or not. Stewart cited Barrow, Clarke, Butler, Berkeley, Hale, Price, Reid, Ferguson, Robison and Gregory as examples. In what is almost certainly a nationalistic dig at the Ministers of Edinburgh, Stewart notes that he has cited many English divines, 'but which, I am sure, will not, on that account, meet with the less respect from any one party connected with the established Church of Scotland...'.[cclxvii]

The disturbing events of 1805 were enough to raise the temper of Stewart, who, perhaps

unwisely, engaged the Minister's philosophical point about causality. In doing so, Stewart passed along a critical appraisal of the charge against Leslie that is said to have originated with the London theologian, *Dr Clarke*.[cclxviii] The remark was to the effect that the Minister's reproach of Leslie on the grounds of his having 'denied an operating principle in the cause' suggests that their own view must actually endorse the idea that the necessity in operating principles is to be attributed to physical events themselves. As Stewart argued, such a view could also be made to appear to endorse atheism. Stewart elaborates on the main idea behind this criticism in his *Short Statement of Facts*. He begins by asking to what species of cause the operating principle described in the charge is to be applied. It cannot be to God, he reasons. For, as was argued by Leibniz's famous correspondent, Dr Samuel Clarke, physical laws governed by necessity would be independent of *any* will whatsoever. As Dr Gregory elaborates, events bound by necessity do not require God, and nothing on heaven or earth could prevent them from being what they are. 'The only supposition, then, that remains', Stewart argues, is that 'the operating principle is to be understood to belong to the physical cause itself, connecting it necessarily with the effect; or, in other words, that physical and efficient causes are one and the same.'[cclxix] Stewart goes on to say that he can hardly believe that the Ministers could have intended such an argument. Indeed, it is 'the very essence of the system of Spinoza', which 'acknowledges in words the existence of a Deity' but, by means of the doctrine that active powers in physical causes connect them necessarily with their effects, is 'subversive of that fundamental principle of all religion'. 'The amount of the system' (says Dr Clarke) 'is *this*, that all things are equally self-existent, and consequently, that the material world is God.'[cclxx] Thus, Napier reports, 'owing to an ignorant blunder in their statement of what they conceived to be the true notion of *Causation',* Leslie's persecutors 'were themselves obliged to have recourse to explanation, in order to show that their own doctrine was not identical with that of the Fatalists and Spinoza!'[cclxxi]

Having raised the question of the philosophical perspicuity of Edinburgh's clergy, Stewart had, wittingly or not, set off what would become an extended debate. Taking for themselves the very liberty they had denied Leslie, the Ministers clarified the meaning of their original charge against him. What they now claimed was that Leslie had in fact denied *both* a connection between cause and effect and an operating principle in the cause.[cclxxii] As such, they claimed that the doctrine amounted to a denial of Divine power. Either it claimed a causal connection independent of the will of God, or it denied an operating principle in causes. Thus Leslie's statement would be tantamount to the denial of God as Creator. But as Stewart pointed out, this new charge was merely a trap contrived to make it impossible to admit or deny the view, since 'all implications could be made to sound bad'.[cclxxiii]

Although Stewart would come to regret having dignified the persecution of Leslie by pursuing the philosophical question, he had in fact entered the fray. He explains his actions by saying that the events in question had placed him in a difficult position:

> Interests of a higher nature than those of any individual were now at stake. Insult after insult had been offered to the University; and the opinions of our Academical Youth, concerning the foundations of those essential principles which it is my professional duty to illustrate, and which it has been the great object of my life to defend, were in no small danger of being unsettled by the crude and contradictory notions which were everywhere afloat. On the one hand, I saw a doctrine, which had been sanctioned by the highest names in Theology and Philosophy, and which I myself, for more than twenty years, had laboured to establish, from the firmest conviction of its importance, not merely to the progress of physical science, but to the best and highest interests of mankind; this doctrine I saw menaced with the anathemas of a powerful party in the Church; while, on the other hand, Persecution was preparing, as of old, to display her banners, in defense of an inconsistent jargon of

metaphysical words, which waged war with the human understanding.[cclxxiv]

As Stewart explains, the Leslie affair represented a rather unfortunate constellation of many of the themes of his life's work. Having devoted his life to defending a form of political liberty compatible with 'theological interests', Stewart's own view was that Hume's position is compatible with theism. Hume's point, Stewart argued, was that descriptions of causes and effects are analogies to what is observed in nature, and that real causal links are invisible. On Stewart's reckoning, this account supports theism, since it 'keeps the Deity always in view, not only as the first, but as the constantly operating cause in nature, and as the great connecting principle among all the various phenomena which we observe.'[cclxxv] Understood in this way, Stewart argues, Hume's position is consistent with theism, so long as it is admitted that the mind can infer that observed changes are due to an efficient cause.

The central point in Stewart's defense of Leslie is that metaphysical and physical senses of causation are to be kept separate. Stewart cites his own definitions in his *Elements of the Philosophy of the Human Mind*, where he distinguishes between metaphysical and physical causes. The metaphysical sense of cause is that every change in nature indicates the operation of a cause, and this cause is supposed to be necessarily connected with the change. The term 'physical cause', however, is used merely with reference to constant conjunctions of things, although it is these constant conjunctions which lead us to speak in terms of 'metaphysical causes'.[cclxxvi] Physical laws, such as the law of gravity, Stewart explains, are based on observational evidence, and express only contingent necessity. Since necessary connection cannot be known by observation, we cannot deduce effects from causes or vice versa. So Leslie's was right to say that invisible intermedia should not be supposed to cause gravitational effects. Indeed, as Francis Bacon advocated, scientists should exercise great caution in introducing new causes. Stewart concludes by pointing out that to maintain the view that there is observational evidence of necessary connection is contrary to received opinion and absurd. In one biting remark, he points out that the Church of Scotland had recourse to the same mistaken supposition, when it declared that 'it may very well discharge all such acts wherein there is no necessary connexion inter causum et effectum as it pleases, under the pain of Witchcraft'.[cclxxvii]

Stewart's strategy then, was to attempt to distinguish two senses of causation; the one physical, and the other metaphysical. Stewart maintained that only in the latter sense could there be talk of necessity. Similarly, Leslie, and those professors and students who would defend him, maintained that a limitation expressed by inserting the word 'physical' before the word 'cause' would have been sufficient to dismiss the ambiguity that led to the charge of atheism. Whether or not the point can withstand scrutiny, it did have merit as a forward-looking step in the direction of solving Hume's problem. As Macvey Napier reports, the general sentiment regarding the outcome of the debate was in favour of Stewart's view. For, 'It was on all hands admitted, that if Mr Leslie had, by a single word, limited his observations to *Physical* causes, they, in that case, would have been wholly free from objection'. To suppose some other meaning would lead to a 'most perverse and intolerant construction' of a footnote to 'a work purely physical' in which the criticism was 'obviously leveled at those theories which resort to certain invisible *intemedia*, in order to account for the connection of physical sequences.'[cclxxviii]

Having committed themselves to a fairly specific charge, the alternatives for the objecting Ministers of Edinburgh were to back down defeated, or to continue with the offensive. Reverend John Inglis, head of the Presbytery bearing the right of *avisamentum*, decided to forge ahead. Much of his commentary was aimed at the inconsistency of Stewart's position, based on definitions of terms in various of Stewart's texts. But the substantial point on which Inglis's case rested was the claim that the only theologically acceptable understanding of the term 'efficient

cause' was the scholastic one. Citing authorities such as Malebranche and Archbishop King, Inglis maintained that the sense of causality still in general acceptance was the scholastic sense of the term. Thus, a '*true* cause', as Malebranche writes, is 'that betwixt which and its effect, the mind perceives a *necessary connexion*.'[cclxxix] Similarly, Archbishop King writes that when we contemplate ourselves, we realize that we do not exist of ourselves, and that 'we are necessarily carried to some cause' and that our understanding 'must have a necessary connection with some cause distinct from us.'[cclxxx] Thus, Inglis argued, 'The word *cause*, in its primary use, and as still understood by most writers, does, in itself, denote efficiency. A physical object or event, if it possesses no efficiency, is improperly denominated a *cause*.'[cclxxxi]

In appealing to scholastic sources, Inglis showed little sensitivity to the sort of philosophical defense that would be effective in early nineteenth century Edinburgh. In a post-Humean and post-Kantian context, the return to scholastic authorities sounded hollow to most ears. Scholastic traditions had long since been replaced in Edinburgh's literary circles, and recent epistemological debate had centered on questions such as the relative merits of empiricism and transcendentalism. Inglis simply could not muster a contemporary sounding epistemology to accompany his theological precepts. In the end, he fell back on a standard appeal to ignorance. In trying to drive a wedge that could mitigate the damage caused by the Ministers claim about 'operating principles *in* the cause' Inglis suggests that the conception of necessity applicable to the physical world might well be different from that applicable to divine legislation. For all we know, the argument goes, mathematical necessity might not hold a candle to divine necessity. If so, then no one, including Hume, can understand the sense of necessity at work in God's creation. One problem with this argument is that the appeal to ignorance fails to supply evidence in support of theism. Another difficulty is that as a sceptical appeal, the argument is surely just as 'dangerous' as Hume's doctrine of causality.

Thomas Brown, whose 1805 *Observations on the Nature and Tendency of the Doctrine of Mr Hume concerning the Relation of Cause and Effect* had been discounted by Inglis, on the grounds that it did not align with other positions in the debate, took the opportunity to mock Inglis's scholastic approach.[cclxxxii] Rejoining the discussion in 1806, Brown took up the details of Inglis's position, and made short work of reducing it to absurdity. As Brown pointed out, on Inglis's view, the terms 'physical cause' and 'efficient cause' are to be understood as follows: A physical cause is 'the observed antecedent of an event, considered merely as the prior in a sequence of changes'. An efficient cause denotes 'that unobserved, but imagined circumstance of power, supposed in the schools to be essential to the sequence, by which a physical cause *is rendered the invariable antecedent* of its proximate event'.[cclxxxiii] The Ministers of Edinburgh, in having 'expressly excluded from their ground of accusation, any thing relative to physical doctrine', denied the physical sense of cause intended by Leslie.[cclxxxiv] Rather, they insisted that the word 'cause' be used only with reference to the Supreme Being. Thus, the Ministers' charge against Leslie rested only the theologically sanctioned sense of 'efficient causality'. The absurd implications are as follows:

> Mr Leslie will then be accused of denying all such necessary connection between an efficient cause and its effects, as implies an operating principle in the efficient cause; or, as an operating principle is only another phrase for efficiency, the expression may be thus varied, without altering in any respect the intended sense; Mr Leslie having along with Mr Hume DENIED ALL SUCH EFFECT, AS IMPLIES EFFICIENCY IN THE EFFICIENT CAUSE, has of course laid a foundation for rejecting all the argument that is derived from the works of God, to prove either his being or attributes.

In other words, if restricted to the sense of efficient causality sanctioned by the Ministers, the

charge against Leslie is the denial of a tautology. Professor John Playfair later gave the nod to this argument, which he described as a 'masterly and victorious refutation'. Brown's analysis, he wrote, was 'as clear and exact as could be expected in the solution of an algebraic equation' and it 'proved that Leslie was accused of denying an identical proposition.'[cclxxxv] Another observer would sum up the feelings of many in regretting that scholastic philosophy had been brought into the debate, since it had blown the Leslie affair quite out of proportion, and tied it in an unfortunate way to 'matters ecclesiastical'.[cclxxxvi]

One reason that the connection between Hume and scholastic theology was a problem, was that it served to emphasize the fact that most empiricists working in the post-scholastic tradition were inclined to treat the issue of causality as had Hume. Indeed, Hume's view, whatever its theological consequences, had already been widely received as the standard empiricist position. There was thus a strong temptation on the part of many, including Leslie and Stewart, to separate theological and empirical investigations, an unhappy solution for those who did not wish to leave theology outside the purview of empiricist philosophy. Philosophers such as Kant had offered transcendentalist solutions to Hume's problem, solutions that had been promoted in Edinburgh's literary circles years before the Leslie episode. Willich, for example, had repeatedly endorsed Kant's answer to Hume. In his 1798 publications, Willich addresses local concerns regarding atheism and promotes Kant answer to Hume. In recommending Kant, Willich pacifies the clergy by saying that Kant is 'the only person who has ever yet been able to subvert the reasoning of the British sceptic'. He then adds for the sake of his scholarly readership that the critical philosopher's answer is 'not from a *theological* moralist, but from a *moral* theologian'.[cclxxxvii] Moreover, the answer is sorely needed, Willich laments, for as Kant pointed out in his *Prolegomena*, Reid, Oswald, Beattie, and Priestly all missed Hume's point. They took for granted that which Hume had doubted, and doubted that which it had never occurred to Hume to doubt.

> It was not the question, whether the conception of cause be right, useful and, relatively to the whole cognition of nature indispensable, for of these Hume never harboured a doubt; but whether it be thought *a priori* by reason, and in this manner have an internal truth independent upon all experience: on this head Hume expected information and, as he himself says, still kept his mind open to instruction, if any would vouchsafe to bestow it on him.[cclxxxviii]

Thus, Willich made a direct appeal to the interests of his Scottish readership, and tried to set Kant's transcendentalism in a positive light against sceptical forms of empiricism. Although he doubtless raised the ire of local scholars when he at one point likened empiricist doctrines to noxious weeds -- and then applauded Kant for having choked them out -- he was also conciliatory, liberal, and tolerant. In his edited collection, *Essays and Treatises On Moral Political and Various Philosophical Subjects,* published some forty-five years after the Hume scandal and several years before the Leslie episode, Willich reflects on the persecution of Hume and his followers. 'Hume's scepticism', he comments, 'seems to be the favourite and inexhaustible topic, on which our modern champions of orthodoxy still insist.' But 'these modern practitioners' he continues, are 'more attentive to the cant of their profession, than observant of the spirit of Christianity' and 'betake themselves but to invective, personal attacks, foul aspersions and declamation, instead of argument.'[cclxxxix] Let people alone, Willich pleads, 'if they have talents, if they show a spirit of profound and new inquiry, in a word, if they possess but reason, which always gains'. For otherwise, 'if ye call out high treason, call together, as if by alarmbell, the commonwealth, which by no means understands such subtile elaborations, ye render yourselves ridiculous.'[ccxc] Willich, in fact, quite openly condemns Scotland's tradition of persecution, saying that 'men of candour and discernment look upon it as disgraceful, not only to

sacred offices, but to the rank in society of men of letters'.[ccxci] Thus it was that Willich endorsed Kant as an antidote to dogmatism, atheism, scepticism, -- and perhaps even to persecution.

Willich had anticipated the very sentiment regarding free speech that Playfair expressed in connection with the Leslie affair. And though his polemic on persecution may have been appreciated by some of Leslie's supporters, Willich's recommendation of Kant as a philosophical antidote to Hume was overlooked. Well-known figures such as Brown and Drummond had recently censured Kant's transcendentalism, and it is likely that the prevailing empiricist school, not to mention the incendiary charges against Germany and its philosophers, would have made a Kantian remedy sound worse than the ailment. In fact, the differences between transcendentalism and empiricism were only just beginning to be understood at this point in time, and both sides in the debate had difficulty appreciating the strengths of the competing view. Thus, in Villers' 1801 *Philosophie de Kant,* the conflict between empiricism and transcendentalism had been set in a light unflattering to the empiricism -- a challenge taken up in Brown's 1803 critique of Villers. The conflict can is well illustrated in connection with the discussion of Villers' appeal to the metaphor of a *camera obscura,* a metaphor introduced to explain Kant's transcendentalism. The idea behind Villers' example is to show how the mind might come to distinguish objective and subjective elements in cognition. According to Villers, the mind might accomplish this just as the *camera obscura,* in becoming animate, might come to see that its red lens acts as a 'universal form for all of the objects it perceives'.[ccxcii]

> Supposons une de ces machines d'optique connues sous le nom de *chambre obscure,* qui soit munie à l'ouverture par où elle reçoit la lumi ère d'un verre rouge. Tous les objets seront rouges au fond de la *chambre obscure*, et cette teinte rouge sera un produit de la nature du verre; ce verre est constitué de sorte que la couleur rouge doit être une loi, une forme universelle pour tous les objets perçus par lui. Si notre *chambre obscure* pouvait sentir et s'exprimer, elle ne manquerait pas de juger et de soutenir les bâtimens, les arbres, les hommes, en un mot que toute la nature est rouge; elle se garderait bien de devenir d'abord que cette couleur générale dans les objets de sa connaissance, provient d'elle-même, de la constitution de l'organe par où elle reçoit des impressions. [ccxciii]

Villers goes on to ask us to imagine a variety of scenarios, each designed to assist initiates to the transcendent perspective. He ask us to imagine, for example, a rock engraved with the design of a 'Minerva', a rock that would always imprint sealing wax with its 'Minerva' design. Would it not be the case, Villers asks, that such a rock, once animated, would simply assume that all seals must be of the form of a Minerva? The example, is, presumably designed to help us to understand how the mind might 'stamp' its *a priori* imprint onto representations. Another example uses the metaphor of three distinctly shaped mirrors to show how reality might well differ from appearance, but unfortunately portrays transcendentalism in a rather simplistic manner:

> Trois mirroirs, l'un *plan,* l'un *cylindrique,* le troisième *conique*, reçoivent l'image du m ême object; cette image sera très- différent pour les trois mirroirs. D' où procède cette différence? De la structure de chacun, qui détermine la forme,la loi que doivent subir tous les objets qui s'y réfléchissent. Prêtons le sentiment et la parole à nos mirroirs; Si celui qui est plan dit: *la chose qui est là devant nous, est un beau cercle très parfait*, '<<le cylindriqu répliquera>>: point du tout, c'est un ovale prodigieusement allongé, et le conique protestera que: <<C'est une esp èce d'hyperbole double, don't l' ècartement est manifeste.>> Dans le fait l'objet en lui-même ne sera peut- être aucune de ces choses, et cependant chacun des trois mirroirs aura raison, car n'ayant réellement pour objet que sa propre représentation de la chose, représentation soumise au mode de sa construction intrinsèque, l'objet du premier

> sera bien évidement un cercle, celui du second un ovale, et celui du troisi ème une hyperbole. Si l'entendement que nous avons prêté au trois mirroirs, au-lieu de leur servir à disputer à perte de vue, sur leurs objets, les *analyser*, les *retourner*, s'en fairs des *idées* soi-disant *claires*, et à se traiter l'un l'autre de visionnaire et de fou, leur servait à se replier sur eux-mêmes pour s'etudier, et rechercher dans leur nature ce qui peut influer sur leurs perceptions, ils finiraient par s'entendre mutuellement, bien qu'aucun d'eux ne puisse jkamais parvenir à connaitre l'objet en lui-m ême. -- Il pourrait bien arriver autant à tous les métaphysiciens, s'ils prenait le même parti. [ccxciv]

The *camera obscura* metaphor was to become a focus for Thomas Brown and Sir William Drummond, both of whom invoke it in ridiculing the tenets of transcendentalism, saying that the machine would never be able to draw the inference in question. In 1803, Brown writes:

> As an illustration of the possibility of this analysis, M. Villers adduces the probable reflections of a camera obscura, which, by the power in him invested, he has endowed with animation. To the sensorium of this transcendentalist, the light is supposed to pass through a coloured medium; and the subjectivity of the colour, as part of its sensations, it is affirmed to be capable of discovering, by the exertion of its own unaided powers. To us, indeed, who knows that light has been decomposed in passing, it is easy to make the inference, that all the objects in nature are not red; but we cannot suppose the machine itself, however subtile, to be capable of such an inference. It may, indeed, attain that acuteness of scepticism, which denies the existence of external objects; but it cannot separate their believed existence from their redness; since it is only as definite redness they can be known to exist.[ccxcv]

Drummond, although he receives the least credit for philosophical acumen and originality, gets full marks for style in his dismissal of Villers' example. In this short excerpt gives the flavour of Drummond's derisive, but nonetheless amusing, 1805 tirade:

> But it is now, we may conclude, that the mystagogue proceeds to the explanation of the distinction between what is *objective*, and what is *subjective* -- the most sublime, we are told, and the most extravagant, we think, of the doctrines of Kant. It is now, that he draws from beneath his philosopher's robe, *a camera obscura, a seal-ring, and three pocket mirrors*.
>
> The *camera obscura* receives the light through a red glass -- the figure of Minerva is engraved in the seal-ring -- one of the mirrors is cylindrical, another plane, and a third conical. Such are the instruments, with which the transcendental philosopher prepares to unfold the secrets of nature, and the laws of the universe.
>
> If the *camera obscura*, observes the mystagogue, could feel and speak, it would say, that all the objects of its perception are of a red colour. The seal-ring endowed with sentiment would think, that wax can only take the form of Minerva. The three mirrors would no sooner see, what is seen in them, than each would jugde of the forms represented upon its surface, according to its own proper construction, and would conclude, that these are the real forms of the external objects. Now, continues the mystagogue, the *camera obscura*, the seal-ring, and the three mirrors, are so many empirical philosophers. Let us learn from the French author, how they may be metamorphosed into critics and transcendentalists.[ccxcvi]

Thus, the defenders of empiricism summarily dismiss the *camera obscura* metaphor, opting instead to develop an empiricist response to Hume's challenge. The most celebrated of these philosophical efforts was the one published by Thomas Brown in 1805. Brown's *Observations on the Nature and Tendency of the Doctrine of Mr Hume concerning the Relation of Cause and*

Effect, which was in fact written as part of an effort to establish a philosophical rather than political base for the discussion of Hume in the Leslie controversy.[ccxcvii] However, as an advocate of empiricism, Brown's did not aspire to the transcendentalist's reply to Hume. In addition, as David Brewster noted, 'the moderate clergy in our church, have dismissed, simpliciter, the *a priori* argument, in as far as they have proved that Mr Leslie, by attacking the doctrine of necessary connexion, has denied all argument whatever for the being of God'.[ccxcviii] Nonetheless, at least one publication connected with the Leslie affair did attempt to bring in 'the *a priori* argument'. Published many years after the initial controversy had taken place, the work was Mary Shepherd's book entitled *An Essay on the Relation of Cause and Effect*.[ccxcix] The book represents a sincere effort to engage both Hume's philosophy and the *a priori* argument. The work responds to many of the points raised in Leslie dispute, and in particular, to the position developed by Thomas Brown in his otherwise neglected *Observations*.

2.4 Brown's *Observations* and Shepherd's Reply

In the end, the discussion surrounding the appointments of Hume and Leslie drew attention to the importance of Hume's achievement, and this in turn led to a growing demand for a serious philosophical response to his doctrine of causality. The most celebrated of these philosophical responses was Thomas Brown's seminal work, *Observations on the Nature and Tendency of the Doctrine of Mr Hume concerning the Relation of Cause and Effect,* published in 1805. There, Brown follows the lead of Reid and Stewart, and acting as apologist for Hume, begins by accepting a number of Hume's empiricist premises. Brown says, for example, that a cause is defined as 'a*n object followed by another, where, if the first object had not been, the second had not appeared, and which, existing again in similar circumstances, will always be followed by the second*.'[ccc] He goes on to attribute five propositions to Hume, taking them up one at a time for the purpose of examining, and ultimately defending, Hume's theory of causation.[ccci] Brown's five propositions are:

1. The relation of cause and effect cannot be discovered *a priori*.
2. Even after experience, the relation of cause and effect cannot be discovered by reason.
3. The relation of cause and effect is an object of belief alone.
4. The relation of cause and effect is believed to exist between objects, only after their customary conjunction is known to us.
5. When two objects have been frequently observed in succession, the mind passes readily from the idea of one to the idea of the other; from this transition, and from the greater vividness of the idea thus more readily suggested, there arises a belief of the relation of cause and effect between them. [cccii]

Brown admits the first three propositions, but rejects the fourth and fifth. Like Hume, he accepts Locke's theory of ideas, and he takes it as an obvious point that causes are discovered through experience and not known *a priori*. To this, he adds that belief in causality results from drawing an analogy from observed conjunctions to the idea of invisible causes or powers. The second proposition that Brown considers is that the relation of cause and effect is not discovered by reason's examination of experience. Brown argues that this follows because 'future and invariable antecedents and sequences' are neither discernible in nor implied by what is given in experience. What Brown next claims is that when Hume asserts that the relation of cause and effect is an object of *belief*, he really means that it is an object of *faith*. For, the first proposition shows that the causal relation cannot be *perceived*, and the second proposition shows, the causal relation cannot be *inferred*, so the only remaining sense of 'belief' is in the sense of 'having faith'. As such, Brown claims that for Hume the causal relation is believed as an object of *faith*. Brown interprets what this might mean, saying that '...as soon as we *believe* the relation of

cause and effect, the idea of power arises. The belief, indeed, is "instinctive" but the ideas that follow do so regardless of the origin of this belief.'[ccciii] So, in the end, Brown argues, Hume *does* provide a foundation for cause and effect, but that the foundation is based on instinct rather than reason, so that 'we *believe*, rather than *discover*, the relation of cause and effect.'[ccciv]

Having defended the first three propositions, Brown rejects the fourth and fifth. He rejects the fourth on the grounds that we are in fact able to draw conclusions about cause and effect after only a single trial. The boy who is stung by a bee, Brown maintains, does not wait for a second or third application before he fears the sting.[cccv] Brown also rejects the fifth proposition, which concerns the psychological mechanism that leads to belief in cause and effect. Against Hume, he argues that it is not frequency of conjunction and the attendant vividness that leads to the formation of ideas of cause and effect. For, we often have intense sentiments annexed to consecutive ideas wherein no causal belief is formed. Here Brown elaborates by drawing on the example of the romantic memory of a loved one that 'is a cause not of less, but of more, lively conception' than those in which causal beliefs are formed.[cccvi] Thus, Brown rejects the final claim that the belief in causal connection depends on frequency of conjunction or vivacity of impression.

In 1805, the Reverend Inglis and others had discounted Brown's analysis as 'substantially and radically different' from the discussion of both parties in the Leslie controversy, so that Brown was thereby 'disqualified, as an antagonist'.[cccvii] Brown is modest on the subject of his *Observations*. 'Whatever, therefore, may be the general sentiment, as to my own peculiar views of the subject' he writes, 'I shall have attained my wish, if... I have succeeded in shewing, that the evidences for the most important of all truths remain unshaken'.[cccviii] What Brown really hoped to secure then, were 'evidences for the most important of all truths'; namely, the truth of God's existence. Theism was also the central issue for Mary Shepherd. However, Shepherd rejects Brown's analysis, which she takes to *undermine* the foundation for our belief in God. Like others of her day, Shepherd found Brown's analysis to be crude and mistaken. However, she did consider the work to merit a response. Her 1824 *Essay* is in fact advertised to the reader as a reply to Brown's *Observations*:

> It is not many years since Mr Hume’s notions were the occasion of much dispute, on the very ground on which I have undertaken it; a dispute which nearly lost the mathematical chair in one of our universities to the present possessor of it, on account of his favouring this doctrine. His opinion, however, as far as it related to any countenance it might afford to the principles of atheism, was defended by a learned treatise, from the then Professor of Moral Philosophy, in the same University. This treatise, whilst it controverts Mr Hume’s opinions in some respects, denies that atheistical inferences may be deduced from them; but I shall endeavour to show, that, in this respect, the author wanted observation and acuteness; neither perceiving the corollaries that go along with the doctrine, nor detecting the sly and powerful sophistry of the reasoning by which they are supported.[cccix]

Shepherd's 1824 *An Essay on the Relation of Cause and Effect* should therefore be studied in conjunction with Brown's text. There, Shepherd repeats Brown's format, but unlike Brown, she proposes five propositions to the end refuting Hume. Shepherd's five propositions are:

FIRST, That *reason*, not *fancy* and ‘custom’, leads us to the knowledge That everything which begins to exist must have a Cause.
SECONDLY, That *reason* forces the mind to perceive that *similar causes* must necessarily produce *similar effects*.
THIRDLY, I shall thence establish a more philosophical definition of the relation of Cause and

Effect.

FOURTHLY, show, in what respects Mr Hume's definition is faulty.

FIFTHLY, proceed to prove that Nature cannot be supposed to alter her Course without a contradiction in terms; and, finally, show that *Custom and Habit* alone are not our guides; but chiefly reason, for the regulation of our expectations in ordinary life.[cccx]

Not only does Shepherd's *Essay* parallel the form of Brown's *Observations*; it also takes up the challenge posed in Brown's closing remarks. After reiterated his thesis that Hume identifies *instinct* as the one and only possible foundation for the causal relation, Brown goes on to claim that the 'only dangerous scepticism would be, to deny the reality of the instinct'.[cccxi] He closes with the disingenuous lament that 'if the belief of power had depended, not on instinct, but on reason, it would have rested on a principle of surer evidence.'[cccxii] Shepherd is not convinced by Brown's argument, and she objects to his founding of belief on 'inferences of imagination' and the 'blind impulse of faith'.[cccxiii] Her 1824 *Essay* takes up the challenge to provide a foundation for the causal relation in reason. The discussion there, however, is largely directed against Hume rather than Brown.[cccxiv]

The full details of Shepherd's account can only emerge given a careful examination of her texts, the initiation of which follows in the next chapter. However, it is clear, both from Shepherd's linking of her own text with Brown's, and from the manner in which she argues, that it is her intention to respond to the analysis set out by Brown in his *Observations.* Against Brown, Shepherd aims to show that reason can prove the existence of a necessary connection between cause and effect. It would appear, in fact, that Shepherd intends to advance a line that combines *a posteriori* reasoning with *a priori* causal necessity. Shepherd rejects Hume's doctrine of causation, a doctrine whose arguments she regards as 'illogical' and whose conclusions she takes to be 'untrue'. Against Hume, she claims that an empirical act of introspection does lead the mind to the discovery of necessary connection. For, the *determination* of anything that begins to exist requires the inclusion of the idea of a cause in our representations, and it follows that any attempt to *think* 'dependent qualities that begin to exist' as uncaused leads to contradiction.[cccxv] As such, Shepherd maintains, 'when the mind perceives by what passes within itself, that no quality, idea, or being whatever, can *begin* its own existence, it...perceives the general necessity of a cause for every effect'.[cccxvi] Thus, introspection and analysis are required before the mind can gain knowledge of necessary connection, which connection, however, is given *a priori* in the very moment of concept formation. This would fill in the gap in the debate that David Brewster noted in his remark that the Leslie affair had proceeded in such a manner as to ignore the *a priori* defence of the causal relation. As Shepherd sees it, both *a priori* elements and reason are indispensable in defending knowledge of causal necessity.

It is quite evident then, that Shepherd's 1824 text emerges directly from the philosophical discussion and debate of her social and intellectual milieu. Shepherd was well educated, a woman, a member of the nobility, a theist, and a social acquaintance of Leslie and his many supporters. As such, she brings a unique approach to the controversy. Indeed, of all those directly affected by the Leslie controversy, Shepherd was one of just two of Edinburgh's philosophers who would make the debate and discussion surrounding the Leslie controversy the centre of their life's work. For the two individuals involved, Thomas Brown and Mary Shepherd, the issues ran very deep, and they continued to develop ideas of causality initially conceived in response to the Leslie controversy of 1805-06 for many years. The late publication date of Shepherd's 1824 treatise can in part be explained in relation to Brown's re-publication of his own analysis of causality in his 1818 *Inquiry*. As a woman, Shepherd was more of an outsider to scholarship than most agitators in the debate, a fact that also goes a long way to explain why her contributions emerged so much later than the initial publications in the controversy.

However, as we shall see, the late publication date of the 1824 treatise can only be fully understood in connection with subsequent events in Mary Shepherd's life.

The Causal Relation and the 1824 Treatise

3.1 Spurious Connections: Leslie, Malthus, and Common Law

There is a gap of nearly twenty years between the Edinburgh events of 1805 and the publication of Mary Shepherd's 1824 treatise. It was during these years that Lady Mary was married to a barrister by the name of Henry John Shepherd, after which she became known under her married name, Lady Mary Shepherd. Henry John Shepherd was the son of Sir Samuel Shepherd, a prominent member of the British legal profession, based in London It seems likely that the couple met in London; and, the Primrose family did, in fact, have long-standing London connections. Under James VI and I, Sir Archibald had been a member of the Privy Council of Scotland, and, soon after the Revolution of 1688, his son was created the Earl of Rosebery. Mary's father, Neil Primrose, was Representative Peer for Scotland between 1768 and 1784, and during this period, the family rented Holland House.[cccxvii] By 1796, the Earl of Rosebery appears in *Boyle's Court Guide* on Bruton Street, Berkeley Square, and beginning in 1801, Neil Primrose is listed at Park Lane. At this point, the Primrose daughters had advanced to a marriageable age, and it is likely that the family spent a considerable portion of the year in London. Mary Shepherd was the last of Neil Primrose's daughters to marry, and her marriage permanently shifted the centre of her world from Edinburgh to London. In London, she remained close to many of her Edinburgh associates, but her intellectual circle expanded to include a wide range of brilliant minds living in the southern parts of Britain. By 1824, it was evident that careful attention to the nature of scientific reasoning and to the defence of the causal relation would be required in the wake of Hume's critique. Mary Shepherd and her circle were particularly sensitive to this need, and one of their central preoccupations was, in fact, with the logic of induction. In this chapter, we will consider both the social and intellectual influences that shaped Mary Shepherd in adulthood, with the aim of reconstructing how the discussion and debate surrounding causality and induction influenced the direction of the 1824 treatise.

To begin, we turn to the circumstances of marriage and the social connections of the Primrose children. Like many aristocratic families of the eighteenth century, the Primrose family would have been conscious of the importance of an advantageous marriage. A few love matches, and too much time spent gambling away the family fortune could easily lead to trouble, and possibly extinguish a family line altogether. And, though it was important to marry well, it was often difficult to find a suitable match. It turns out that the conventional expectations regarding marriages of the period are reasonably helpful in understanding the marriage pattern in the Primrose family. According to the conventional pattern, elder sons or sons who could expect to inherit a large chunk of the family's wealth, generally had the pick of marriageable women. And, such was the case for Neil Primrose's eldest son, Archibald Primrose, who became the fourth Earl of Rosebery. Younger sons, however, especially sons who did not expected to inherit a substantial fortune, were encouraged to take on a profession. The Primrose family's younger son, Francis Ward Primrose, did inherit a family estate in Norfolk, but he had a gambling problem, and ended up in the civil service in Canada. Though the prospects of younger sons could be bleak, daughters of aristocrats faced especially difficult circumstances. The system of primogeniture meant that there were few heirs and few opportunities for aristocratic girls to retain social status. At the turn of the nineteenth century, about one quarter of upper-class young women remained unmarried. In many cases, they were regarded as a burden to their families, and were obliged to take on roles such as governess or companion. Undoubtedly the preference for most daughters would have been to retain social standing through marriage, and with this in mind, daughters of aristocrats were encouraged to acquire the basic arithmetic and literacy skills required to manage an estate and to learn 'polite manners'.[cccxviii] Fortunately, the marital outlook of the Primrose daughters was not at all grim; for Neil Primrose was able to

provide a dowry of £20,000.[cccxix] Thus, the Primrose children were well educated, well provided for, and ideally placed to make good matches. And, London was just the place to find a suitable match. Despite all of this, the Primrose children do not seem to have fallen neatly in line with the pattern typically associated with the advantageous marriage.

From an early age, Charlotte Primrose had excelled in mathematics, and was frequently called upon by her father to assist with estate management, a circumstance that would have helped to single her out for marriage into the peerage. In fact, of the three Primrose girls, Charlotte's marriage appears to have been the most socially advantageous. Her husband, Kenneth Howard, stood in line to become the Earl of Effingham. Unfortunately, at the time of his marriage in 1800, Kenneth Howard had neither wealth nor title, and Charlotte Primrose's parents did not approve of the match. Kenneth Howard, so the story went, is 'a near relation of Lady Rosebery's and may become Earl of Effingham, but has at present only his pay as Col. in the Guards.'[cccxx] In the end, Charlotte Primrose did become Countess of Effingham, and, best of all, she made a rare love match. It is true, however, that she and her children struggled financially; and that Kenneth Howard did not succeed to the Earldom until 1837.

Of the other Primrose marriages, the most noteworthy were those of Mary and Archibald.[cccxxi] Both marriages appear to have been products of the family's London connections, and both were unusual in their own ways. In 1808, Archibald Primrose, who became the forth Earl in 1814, married the beautiful Harriet Bouverie, daughter of Bartholomew Bouverie. Archibald loved his wife desperately, but the marriage ultimately ended in lawsuit and divorce. According to Henry Brougham, defence council for Sir Henry Mildmay, it was a series of unfortunate and accidental circumstances that had culminated in this 'melancholy story of a mutual, sincere, ardent, devouring passion' between Sir Henry Mildmay and his deceased wife's sister.[cccxxii] Archibald Primrose, hopelessly in love with his wife, sent her away to Barnbougle. Mildmay, naturally, soon followed. Travelling in stealth to the castle, he would nightly join the Countess in her bedroom after dinner. Upon catching the adulterers in the act, Archibald Primrose is said to have shot Mildmay in the arm.[cccxxiii] The Primrose family account of the divorce is somewhat different.[cccxxiv] Archibald Primrose, and several other members of the family, remained sympathetic to the beautiful Harriet Bouverie, who was cast as a victim of Sir Henry Mildmay. Considerable blame was laid on the interference of the Countess dowager, who withheld Harriet's letter of explanation and apology. Many years later, upon learning of this interference, Archibald Primrose was crushed, and avowed that, 'I love her now as I did the day we were married.'[cccxxv] Thus, there was a second love match in the family, but one with a tragic twist. In the well-publicised court case, Archibald Primrose won £15,000 in damages, a huge sum, but apparently no consolation for his broken heart. Sir Henry Mildmay, on the other hand, triumphantly mocked the whole affair in court, sporting the Countesses' yellow garter on his arm.

Lady Mary's marriage is something of a mystery. She was thirty years old when she married, and unlike most young women of her class and generation, she did not marry an older, well-established man. Her husband, Henry John Shepherd, was a poetic and romantic individual six years her junior. Lady Mary was married by license, an unusual choice for a woman of her standing, but a practice that would have avoided the reading of Banns. She took her vows on 11 April 1808, and gave birth to her eldest daughter, Mary Elizabeth, on her own birthday, 31 December 1808.[cccxxvi] Her second and third children, Henry Primrose and Maria Charlotte, were born in 1814 and 1815, respectively. Although we do not know of the circumstances that led to the marriage, we do know that Mary Primrose became Lady Mary Shepherd, a London society woman and mother to three children. And, regardless of the circumstances of the marriage, happy, sad, or indifferent, Mary Shepherd thrived in her marriage more than many can boast.

Lady Mary's husband, Henry John Shepherd, was educated at Eton and Cambridge, and, following this, took up law at Lincoln's Inn. He was a barrister on the Oxford circuit, and, from 1818-1820, MP for Shaftesbury. In the 1820s, he took a graduate degree at Cambridge, and it was probably through his connections in Cambridge and Oxford that the couple became social intimates of some of the finest young thinkers of their generation, many of whom became eminent scholars and scientists. In addition to writing a Master's thesis, Henry John later produced some dramatic works, and a summary of the law concerning elections of Members of Parliament in Britain.[cccxxvii] His eldest daughter describes her father in affectionate terms, as having a nature that 'united with deep tenderness of heart, and sympathy for his fellow creatures, a brilliant and attractive fancy and imagination.'[cccxxviii] But Henry John Shepherd may have been more inclined towards poetry than philosophy, for 'he was full of apparent paradoxes, which from his friends always met with a kind of tender appreciation.'[cccxxix] Lady Mary, tutored at home on the 'old fashioned Scotch plan' of James Pillans, appears to have been the product of a more rigorous and demanding education. The resulting combination in the marriage was slightly odd, but not unpleasant: 'The difference of circumstances in their bringing up, combined with the similarity in simplicity of character, between my father and mother, made the peculiar natural flavour and refinement of the tone of conversation in their home.'[cccxxx]

The Shepherd family was very well placed socially. Sir Samuel was King's Advocate between 1813 and 1819 and later Lord Chief Baron of the Court of the Exchequer of Scotland from 1819 to 1830. All told, the family circle attracted many eminent individuals, and the home of Lady Mary and Henry John Shepherd became a sort of intellectual and literary hub. Their circle of social, scientific and literary friends, included, among others: Jeffrey Lockhart and family, the Reverend Sydney Smith, Thomas Malthus, David Ricardo, Henry Hart Milman, Henry Hallam, the Leonard Horners, Charles Lyell, Charles Babbage, Mary Somerville, William Whewell, John Murray, Lord Lyndhurst and family, and Lord Dudley.[cccxxxi] Other guests were college friends of Henry John Shepherd, such as William Maule, Lord John Campbell, Thomas Talfourd, the Hobhouses, and Mr. Abraham Hayward. Among the ladies were Lady Charleville, Lady Stepney, and Miss Runnington.[cccxxxii] Thus, Lady Mary not only pursued her scholarly interests throughout her married life, she ran a salon of sorts, to which there were many regular subscribers. According to her daughter, there were frequent dinner parties, and after dinner, these parties were opened up to a wider circle of friends who would gather to discuss the latest developments in a variety of fields. 'Sometimes there would be a dinner of 8 or 10 with general conversation, sometimes of 12 or 14 breaking into groups. Dinners then were early enough to have an after evening; and at half past 9 or so, there would assemble really at tea, 20 or 30 more in the drawing-room, and the society would melt away at 11.'[cccxxxiii] There were other guests as well, but some have been forgotten, and others left unnamed.[cccxxxiv]

Although it is hard to gauge personal convictions by the wider circle of acquaintance, Lady Mary Shepherd's inner circle supplies clues to her deeper affinities and beliefs. With this in mind, several friends deserve notice as the close confidants of Lady Mary Shepherd. 'The persons who, besides my father, most thoroughly entered into my mother's mind, and followed where she led into great and wide depths of abstract enquiry, were Mr. David Ricardo the political economist, Mr. Pearson, Dr. Whately Archbishop of Dublin, Dr. Whewell, afterwards master of Trinity, and Mr. Cameron.'[cccxxxv] For now, the important point to note is that Mary Shepherd continued to engage many of the brightest and most exciting minds of her time after her marriage. In fact, it was through her marriage that Mary Shepherd succeeded in cultivating her intellectual gifts into mature adulthood, a circumstance that was both extremely fortunate and unusual in her day. That the people and events in her life provide clues to understanding Lady Mary Shepherd's philosophical work will become increasingly apparent as her story unfolds. In the meantime, we must turn to developments in the philosophical, social, and religious context in

which Mary Shepherd's thought evolved. As with her social connections, the social and religious context of the times has no direct bearing on the cogency of Mary Shepherd's arguments. However, just as the social connections provide clues regarding intellectual influence, so the contextual clues help to underscore the significance of and motivations behind Shepherd's philosophical contribution.

We have already glimpsed at how the Leslie affair, and especially the philosophical material written in connection with the episode, influenced the direction and form of Mary Shepherd's 1824 treatise. I have further suggested that Mary Shepherd and her intellectual circle during marriage shared a preoccupation with causality and the logic of induction. As respondents to Hume and his critics, they assessed these subjects not only from scientific, but also from historical, philosophical, and theological standpoints. As such, there are features of the mind set of the times of which we must take note as well, not because of intellectual merit, but because they reveal something about the ideas and attitudes to which Mary Shepherd and her circle were moved to respond. One text, written by William Kerr in response to the Leslie affair, speaks from an extremely conservative religious perspective, and is, in more ways than can be readily counted, bizarre. Yet the 1807 text reveals important things about the way that the Leslie affair appeared to some of the more orthodox thinkers. Kerr's long and rather descriptive title gives the reader a considerable hint: *A Summons of Wakening or, The Evil Tendency and Danger of Speculative Philosophy Exemplified in Mr. Leslie's Inquiry into the Nature of Heat; and Mr. Mathus's Essay on Population, And in that Speculative System of Common Law, which is at the present administered in these kingdoms. To which is subjoined, A prospectus of one Inquiry into the Origin of Government and Law*.[cccxxxvi] The connections made loosely and carelessly by Kerr in 1807, would later be philosophically addressed by Shepherd and her circle, which, it turns out, included several of those implicated in Kerr's personal attacks.

One of the distinctive features of Kerr's work is its censure of speculative and mathematical analyses of nature. Speculative thought, Kerr charges, is an evil threat to religion found in the works of Leslie, Malthus, and the common law. Kerr's rejection of 'speculative systems' is rooted in anger at intellectual developments that threaten religious belief. Hume's doubts about causality, for example, had stemmed from empiricist and speculative analyses, and ultimately led to questions about God's existence. And, with the rise of empiricist analyses went the decline of scholastic philosophy, a decline that gave rise to a broad range of questions relating to causality, God, miracles, the sacraments, and more. One response to empiricist critiques was to offer explicit or revised interpretations on religious matters. For example, both the Anglican and Presbyterian Churches adopted as an official view, that Eucharistic Presence of Christ was impossible, and that Holy Communion could represent no more than a symbolic union with Christ. Given an empiricist analysis, transubstantiation, which literally requires that Christ enter the bread and wine during Communion, could not be explained; for, there could be no mundane explanation of ordinary wine and bread producing the effect of the Eucharistic Presence. As such, the empiricist analysis threatened the traditional Episcopalian interpretation of the Eucharist, and orthodox Episcopalians, like conservative Presbyterians, had their reasons for rejecting empiricism and its critique of causality. Scholastic philosophy, which had argued that God's agency is at work in the world, offered an alternative analysis in which God is the causal agent in the Eucharistic mystery, and so overstepped empirical difficulties. However, as Dugald Stewart had argued in 1805, this view demands an explanation of the nature of God's Presence in the material world, and may lead to the 'dangerous' theology of Spinoza. Although it may be that no rational analysis could resolve the conceptual difficulty attendant to the interpretation of the Eucharist, the Anglican and Presbyterian solutions were deemed to have the advantage of not resting on standard empiricist or rationalist analyses. Nonetheless, the philosophical and theological predicament that the combination of speculation and empiricism had brought on was

one that angered many, and especially those who sought to defend orthodox traditions. Kerr, like many conservative religious thinkers, saw speculative philosophy as an incitement to sceptical doubt and social unrest. Thus, he sought to make precise the sense in which not only speculative thought, but also its proponents, presented a grave danger to religious doctrines and civil society.

What is perhaps the most interesting and distinctive feature of Kerr's *A Summons of Wakening* is that it is the only text in the Leslie affair that attempted to address evidential and methodological issues in Leslie's 1804 *An Experimental Inquiry into the Nature and Propagation of Heat*.[cccxxxvii] The main goal of Leslie's 1804 analysis is to reject the view that heat radiation is a real emanation of caloric in the rays propagating from the heated body. His secondary aim is to show that the medium of propagation for heat is only the ambient air, and not an aetherial medium. With respect to the former goal, Leslie argues that 'there is no proper radiation of caloric' and claims that the effect of heat radiation 'is produced entirely by the mediation of the air'. [cccxxxviii] He sums up his 1804 view that transmission of heat is by means of radiation through the air:

> The portions of heat are not transported by the streaming of the heated air, for they suffer no derangement from the most violent agitation of their medium. The air must therefore, without changing its place, disseminate the impressions that it receives of heat, by a sort of undulatory commotion, or a series of alternating pulsations, like those by which it transmits the impulse of sound. The portion of air next the hot surface, suddenly acquiring heat from its vicinity, expands proportionally, and begins the chain of pulsations. In again contracting, this aerial shell surrenders its surplus heat to the one immediately before it, and which is now in the act of expansion; and thus the tide of heat rolls onwards, and spreads itself on all sides. These vibratory impressions are not strictly darted in radiating lines, but each successive pulse, as in the case of sound, presses to join an equal diffusion.[cccxxxix]

The second and related goal of Leslie's 1804 book is to discredit the theory that a material aether is the fundamental medium through which physical motion takes place.[cccxl] Leslie's remarks on aether, including those that led him to write his infamous footnote, indicate that he thought that both the caloric theory of heat and the aether hypothesis had been thoroughly discredited by his own experimental results:

> What then is this calorific and frigorific fluid after which we are inquiring? It is incapable of permeating solid substances. It cannot pass through tin, *nor glass*, *nor paper*. It is not light, it has no relation to aether, it bears no analogy to *fluids*, real or imaginary, of magnetism and electricity. But why have recourse to invisible agents?
> Quod petis hic est.
> It is merely the ambient air.[cccxli]

In assessing Leslie's work on heat, it is well to keep in mind the difficulties facing early chemists. At the turn of the nineteenth century, for example, chemical theories were vague and there were few known physical facts. Leslie's strengths as a scientist include his ability to see beyond prevailing opinion, what Bacon called the *Idols of the Tribe*, and his realization that advances in chemical science will require 'more delicate instruments, and more accurate modes of experiment'.[cccxlii] His weaknesses have to do with his limited understanding of the logic of confirmation. Like other scientists of the early nineteenth century, Leslie almost invariably looks for confirming instances of his theory, a habit that leads to a false sense of confirmation, today termed 'confirmation bias'. Thus, even when Leslie is on the right track, he does not have the conceptual or experimental means to sort through confusions. Indeed, Leslie's work on heat

suffers from many of the same challenges facing other researchers of his day; specifically, vague theories, few facts, the paucity of instruments, and poor experimental methods. With this caveat, we turn next to Leslie's reasoning in his 1804 treatise on heat.

Leslie, we have said, was afflicted with confirmation bias, and so never gave a truly compelling basis for his doubts. Given that heat does not behave like fluid or like any other substance suggested on the caloric theory, he was quite right to doubt caloric theory. Yet, his experiments, while revealing interesting things about heat radiation, were insufficient to establish that radiation theory was superior to caloric theory. The correct theory of heat, that heat is the kinetic energy of atoms, rather than a latent property of bodies, was not yet available to scientists. In the meantime, Leslie's work on heat radiation, although interesting, did not represent a well-developed theoretical alternative for explaining the available data. The following experiment, for example, is one that Leslie takes to be favourable to his view:

> If successive rings of pasteboard be fashioned into the twisted form of a cornucopia, and its wide mouth presented at some distance to the fire, a strong heat will, in spite of the gradual inflection of the tube, be accumulated at its narrow end.[cccxliii]

The experiment is supposed to present a difficult case for the caloric theory. For, the cornucopia shape of the instrument should impede the transmission of caloric in right lines from the wide to the narrow end, and yet the evidence shows that the far end of the instrument accumulates a 'strong heat'. The example, however, offers little by way of alternative explanation, and Leslie treats negative evidence for the view that there is proper radiation of caloric as positive evidence for his view that the effect of heat radiation 'is produced entirely by the mediation of the air'.

But the major difficulty with the 1804 treatise on heat is that Leslie fails to present a genuine alternative theoretical model for his view that heat is 'merely the ambient air', and that air, rather than aether, is the medium through which heat moves. Kerr is most critical of Leslie's attack on the aether hypothesis, since he takes the aether hypothesis to be supported by revelation. It is in this context that Kerr points out Leslie's confirmation bias; arguing that Leslie overlooks evidence against his own assumptions about heat and that the evidence is ambiguous. Perhaps it is in compensation for these shortcomings that Leslie makes an appeal to the methodological principle of simplicity. 'But why have recourse to invisible agents?' he asks, -- and rightly so. For it is true that according to Ockham's razor, simplicity does count against aether theory. But, as we have already noted, the weakness of aether theory provides no independent support for Leslie's hypothesis, and neither heat radiation nor the air hypothesis can be made to look better because of the poverty of the aether hypothesis. And since Leslie's air hypothesis accounts for phenomena by means of a trivial simplification -- the elimination of assumptions about aether and caloric -- simplicity plays no genuine role in helping to decide between the theories. That is, Leslie's proposal is trivial in the sense that it does neither more nor better explanatory work than did the old theories. In the final analysis, no matter how bad the aether hypothesis or caloric theory, the only thing that would help to confirm Leslie's air hypothesis is independent evidential support. Since this support is not forthcoming, Leslie's experimental evidence does not warrant his appeal to *modus tollens* to rule out the received theories in favour of his own view that *heat is no other substance than ambient air*. Leslie, however, treats the matter as settled. He argues, for example, against the received view that heat radiation behaves like light, and concludes that, 'Reflection had long taught me to consider the communication of heat among insulated bodies, as performed only by the medium of the intervening air. This opinion I now put beyond dispute.'[cccxliv]

Thus, we cannot credit Leslie with having supplied the crucial evidence or arguments *against*

caloric or aether theories. Though we would today agree that the theories have been disproven, Kerr was technically right to argue that Leslie's work did not itself disprove them. Many scientists, for example, continued to take aether theory seriously long after Leslie had been laid to rest, mainly because the methodological principle of conservatism advises us to hang onto prevailing theories until they have been successfully discredited. The aether hypothesis was decisively falsified in the twentieth century by the Michelson-Morley experiment, which showed that the round trip velocity of light is the same in all directions on the earth's surface. The Michelson-Morley result is inconsistent with the aether hypothesis, according to which light should travel slower in the direction of the earth's motion than it does in a direction perpendicular to the earth's motion. Neither Kerr nor Leslie had an adequate evidential or conceptual basis for such an argument. More importantly, neither had the theoretical means to adequately explain either the nature of falsification or the characteristics of bad science. These methodological insights, and the reasons for rejecting caloric and aether theories, would eventually be fully articulated, but only in twentieth century discussions of falsification and the criteria of demarcation in science.

Karl Popper's theory of falsification, for example, drew several conclusions about the nature of confirmation in science. His most important claims were that only risky predictions that could falsify a theory should count as confirmatory, that the more a theory forbids as impossible, the better, and that *ad hoc* re-interpretation lowers or destroys the scientific status of a theory. On Popper's view, 'the criterion of the scientific status of a theory is its falsifiability, or refutability, or testability', and a theory is 'scientific' only if we can specify in advance some form of crucial experiment or observation that could falsify the theory. [cccxlv] According to Popper's criteria, aether theory is pseudoscience, since it fails to specify an experiment that could falsify the theory. Leslie had the right idea then, when he aimed to falsify aether theory, but his experimental results did not meet the criteria that would enable us to conclude that the aether theory had in fact been falsified. As for the explanation of why aether theory was bad science, Leslie and Kerr both seem to recognize, although they were unable to express the point clearly, that what really matters in evaluating a scientific theory is the objective support that a claim has in facts.[cccxlvi] As another twentieth century philosopher of science, Imre Lakatos, has explained, successful research programs in science are ones that predict novel facts. In degenerate research programs, theories are fabricated only to accommodate known facts. The aether and caloric theories, which produced no stunning or unexpected predictions, and which continually introduced *ad hoc* hypotheses to accommodate novel facts that tended to disconfirm the theories, represent what Lakatos terms degenerating research programs. Unfortunately for Leslie, his work in connection with heat does not bear the hallmarks of good science either.

There are, of course, many other theories that broaden or otherwise construe falsification and demarcation in science. The aim here is not to establish the correct account, but to point out that it is not until twentieth century thinkers such as Popper and Lakatos, that there are clear accounts of falsification and demarcation in science. Although unknown to Kerr and Leslie, the views of Popper and Lakatos help to illustrate the kind of experiment and analysis that Leslie would have had to provide to show that caloric and aether theory are unscientific. Under the circumstances, it is not surprising that earlier writers make stronger claims regarding confirmation than evidence and analysis can warrant. However, in the decades to come, further attempts would be made to understand experimental reasoning and induction, and it was doubtless the sort of commentary found in Kerr that called forth a response and improved analysis on the part of defenders of induction and science. In any case, a certain amount of interest would have stemmed from social connections to those attacked in Kerr's work, from the religious and personal dimensions of the attacks, as well as from the challenge that Kerr's work presented to those grappling with questions concerning causality and induction.

What makes Kerr's attack in *A Summons of Wakening* sound quite mad, however, is his combination of evidential and methodological criticism with other views. Kerr elaborates his attack on Leslie with countless bad points, bitter invective, and emotional language -- all of which go awry of academic scholarship. His general criticism of Leslie, for example, is that his experimentalism slyly mixes speculative thought with 'false constructions of language' and thereby changes the 'truth itself into the semblance of a lie'. The resulting 'heterogeneous mixture of truth, falsehood, and speculative opinions, has a direct tendency to darken the minds of men, to lead them to the path of error, and to bring them into a state of bondage or slavery.'[cccxlvii] Abandoning the proper combination of reason and revelation, Leslie's theory raises doubts about 'true religion', and questions concerning whether natural evidence proves 'that the revelations of God are the words of truth.'[cccxlviii] Worse still, Leslie willfully disregards evidence that 'naturally and irresistibly' leads us to belief in a creator.[cccxlix] Thus, Leslie asks us to not only abandon sense and reason, but also the conclusions that 'the Almighty has been graciously pleased to bestow upon us'. [cccl] And so, Kerr concludes, 'the cloven foot appears'. [cccli] As agent of the Devil, John Leslie is 'the means which the great deceiver of mankind, has employed to seduce them from their allegiance to God; and to bring them under bondage to himself, and to his ministers.'[ccclii] In sum, there is an '*Evil Tendency and Danger of Speculative Philosophy Exemplified in Mr. Leslie's Inquiry into the Nature of Heat'.*

Kerr's invective against Thomas Malthus's 1798 *Essay on Population* is similarly skewed.[ccliii] By the time Kerr gets to his critique of Malthus, it is apparent that he is quite generally opposed to the application of mathematics to natural phenomena. He clings, for example, to the threads of Aristotelian physics, and calls *vis viva* (mv^2), the principle of conservation of motion, a 'lying principle'.[ccliv] Indeed, preserving a form of Aristotelian physics appears to be part of his theological aim. Having revealed the basis for his rejection of a mathematical interpretation in physics, Kerr goes on to treat of Malthus's principle of population growth. Malthus, he claims, has deceived readers into thinking that something other than God might be responsible for population growth, claiming that the population will tend to grow at a geometric ratio while the means of subsistence can normally increase at no more than an arithmetic ratio. And, to claim that the population increases faster than the means of subsistence unless population growth is checked by famine, pestilence, and so on, is to suggest that God is the author of evil.[cclv] Moreover, when Malthus warns that multiplying too fast leads to poverty, contagion, and death -- advising couples to delay marriage and procreation -- he advances a system that is pagan rather than Christian.[cclvi] Kerr further charges that Malthus regards the chief cause of misery and vice as 'that unequal distribution of the bounties of nature, which he it seems, like Tom Paine and the *French Philosophers*, considers to be one of the greatest impediments to *human happiness...*'. [cclvii] As such, Kerr brings together several diverse charges against Malthus, and expresses his general apprehension of political economy, which he links to the revolutionary impulse.

Kerr culminates his discussion with a reproach to the lawmakers. 'Is there no law in this kingdom' he writes, 'for punishing a man for publishing a libel against the Almighty himself, and for endeavoring to seduce all the rest of mankind to join with him, for the purpose of overturning his government?'[cclviii] His point, it seems, has been to establish that there ought to be limits imposed on the publication of treatises such as Leslie's and Malthus's:

> The liberty of the press has, by the mercy of Providence, been preserved in these kingdoms; and it has become one of the chief instruments in his hand, for the protection of British liberty, and for diffusing knowledge to all the rest of mankind. But neither the law of God, nor the laws of this kingdom, will permit any man to abuse this liberty of the press, and employ it

to the injury of other men.[cccliix]

As must have been evident to most readers, Kerr had religious motives for supporting Aristotelian physics and attacking Leslie and Malthus. Kerr's weaving together of methodological and evidential points, conservative religious politics, and personal attack, would have been a source of considerable irritation to many scientists and philosophers with connections to the Leslie episode. Although his work was doubtless regarded as intellectually suspect by those in Shepherd's circle, it reflects the sort of careless and prejudicial thought that she and her associates hoped could be overcome with careful, reasoned analysis.

Regardless of its intellectual limitations, one thing that Kerr's work did made clear, was that Hume's critique placed the onus on defenders of scientific and speculative inquiry to shore up the analysis of causality and induction. Indeed, the analysis that scientists still relied heavily upon at the turn of the nineteenth century was that given by Francis Bacon in his *Novum Organon*.[ccclx] Bacon's contribution to the understanding of induction is especially significant because it was he who realized that a method for ruling out 'accidental' from 'essential' generalizations would be necessary for inductive methods to succeed. To this end, Bacon developed a method in which tables of data could be examined in a manner that would help to exclude accidental generalizations. According to Bacon's method of exclusion, a correlation with an instance in which an attribute decreases when another increases, or in which one attribute is absent when another is present, would be considered an 'accidental' generalization. Bacon envisioned that the experimenter would use his method of exclusion to move from the stage of making observations, to the discovery of, first, invariant relations, and then, more inclusive correlations. In cases where there might exist competing essential correlations, one correlation might be ruled out by a crucial instance, but only if the instance was inconsistent with every set of explanatory premises but one. The scientist's reasoning eventually culminates in the extraction of 'essential correlations' and in an increasing level of generality, finally leading to the discovery of the metaphysics 'forms' of the subject under investigation.

Bacon illustrates his method using the example of heat in Book II of his *Novum Organon*. The first step, he says, is to 'have a muster or presentation before the understanding of all known instances which agree in the same nature, though in substances most unlike.'[ccclxi] If the investigation concerns the nature of heat, then a list is made of the instances where heat is present; for example, the rays of the sun, fiery meteors, burning thunderbolts, all flame, natural warm baths, and so on. A second list is compiled that is as much like the first as possible, except that heat is taken to be absent from the phenomena. Examples include the rays of the moon, stars, and comets, and the 'negatives' of various previously warm things, like liquids, vapors, air, metals, and so on.[ccclxii] Third is a list of instances where heat is present, but varies in degree with the degree of something else.[ccclxiii] With these tables, we are to perform an induction; we reject the things that are present in the first and second tables, or do not vary when what is under investigation varies. This process is supposed to shorten the tables dramatically, so that we are soon in a position to form a hypothesis. In the heat example, the hypothesis is that, 'Heat is an expansive motion whereby a body strives to dilate and stretch itself to a larger sphere or dimension than it had previously occupied.'[ccclxiv]

Bacon's method, although widely admired among the scientific community of the day, had been thrown into question by Hume's critique of causality and induction. For, if Hume was right about necessary connection, then the standard interpretation of scientific method in Bacon could not lead to knowledge of causal necessity. Indeed, it is possible that Leslie may even have seen his work on heat as an advance on Bacon made possible by the post-Humean understanding of causality. But to those who held firm that laws of nature must contain causal necessity, Hume's

critique called for a clearer and more philosophical account of scientific reasoning than Leslie had to offer. Thus, Herschel, Shepherd, Whewell, and others would revisit Bacon's method for the purpose of re-examining the logic of induction.

Thus it was that a re-examination of the nature and logic of induction, something that had not been seriously undertaken since the days of Bacon, would become central to the work of several figures connected with Shepherd and her salon. Kerr's 1807 *A Summons of Wakening*, no matter how suspect, provides important clues to the wider social context in which the response to Hume must be understood. Kerr's text stands as an interesting example an extreme form of religious orthodoxy that accuses scientific, philosophical, speculative, and mathematical analysis of leading the innocent to the Devil and eventually, to social chaos. Of particular interest is Kerr's mixing together of empirical and methodological critique with personal attacks. For in one breath, Kerr claims that scientific experimentalism is a dangerous and 'heterogeneous mixture of truth, falsehood, and speculative opinions'. In another, he likens Leslie to the Devil and Malthus to Paine. He further proposes that laws be introduced to limit the press, on the assumptions that causal laws govern social and individual character, and that limiting free press will help to maintain social order. This cluster of spurious connections recurs not only throughout the Leslie affair, but also as a central theme to many episodes that touched on the life of Mary Shepherd. It is interesting to note that when Leslie's library was sold in Edinburgh, the *only* publication in the catalogue relating to the Leslie affair was William Kerr's *A Summons of Wakening*. Indeed, the text would have drawn the attention of many of those involved in the Leslie episode, as well as that of Malthus. And, both Leslie and Malthus, it turns out, were social acquaintances of the Shepherd's. In addition, Kerr's work would have held curiosity for anyone with an interest in law, including Sir Samuel and Henry John Shepherd. Thus, Kerr's 1807 text, weaknesses an all, helps us to understand not only the mind set of the times, but also some of the motivations that spurred on the reinterpretation of the logic of induction that began in the first quarter of the nineteenth century.

3.2 Brown's *Inquiry* and Whately's *Historic Doubts*

It is really no surprise then, to see a return to questions surrounding the causal relation and induction in the first quarter of the nineteenth century. One of the more significant contributions, in terms of influence, was Thomas Brown's 1818 *Inquiry into the Relation of Cause and Effect*, which develops the doctrine of causality first published in his 1805 *Observations*.[cccLXV] The doctrine in Brown's later work does not appear to have changed fundamentally from its 1805 formulation, and the book was published as a 'third edition' of his 1805 and 1806 efforts. But by 1818, Brown's definition of 'cause' is more precise. In 1805, Brown says that cause is defined as 'an object followed by another, where, if the first object had not been, the second had not appeared, and which, existing again in similar circumstances, will always be followed by the second.'[cccLXVI] In 1818, his definition is clearer, but still places emphasis on antecedence and consequence, so that 'cause' is defined as 'that which immediately precedes any change, and which existing at any time in similar circumstances has always, and will be always, immediately followed by a similar change.'[cccLXVII] Given the similarity in the doctrines of the three works, and the fact that Brown published the 1818 text as a third edition of his original 1805 text, it is fair to ascribe to Brown the intention of elaborating on his original text. And, while there is development in Brown's thought between 1805 and 1818, it is not the sort of development that requires him to backtrack. In fact, Brown's 1818 arguments support his 1805 analysis by producing an accompanying philosophy of mind, the latter being based on ideas developed for his lectures at the University of Edinburgh.

Brown's 1818 views on causality continue to develop as a response to Scottish philosophy, and especially in response to Reid. Brown objects to Reid's philosophy on the grounds that he multiplies both entities and mental operations. Reid introduces ideas of primary qualities, for example, to assist in the explanation of knowledge of the external world; Brown, however, raises a general objection to the theory of ideas and its account of perception. In explaining knowledge of the external world, Brown notices, the theory of ideas construes perception of external things in terms of the reference between sensations and external causes. But any perception that is extra-sensory, such as the perception of primary qualities, must somehow be tied to sensory perceptions of secondary qualities. Thus, primary qualities must really be perceived as a form of sensation, a sensation that differs in kind from sensations of secondary qualities, but that is nonetheless a kind of sensation. As such, belief in an external world, Brown argues, is not based on the direct perception of *ideas* of primary qualities, as claimed by defenders of the theory of ideas, but rather, on sensation. In view of this, he argues, belief in an external world must be on the order of an immediate and irresistible belief arising from sensation.

Brown's develops this latter suggestion, first introduced in 1805, with reference to his work on physiology and philosophy of mind. Beliefs in external causes, he proposes, arise in connection with feelings of resistance associated with muscular contractions. When feelings of resistance intrude on familiar muscular sensations, they make us aware of external objects. On Brown's reckoning, these feelings of resistance, rather than ideas of primary qualities, lead to belief in independent, external causes. For, it is by association with feelings of resistance that there arise in us certain feelings of extension, and in consequence, the irresistible belief that some of our sensations have an external reference. Contra Reid and the theory of ideas then, the foundation for our belief in external existence is in sensible effects that directly compel us to form certain beliefs.[cccLxviii]

With Brown's physiological emphasis in mind, we are now in a position to see how the 1818 *Inquiry* builds on his earlier work on causality. The 1818 book is divided into four parts, each of which places emphasis on the physiological and phenomenal basis for belief in causality.[cccLxix] The first part of the book begins by considering a standard definition of causality, based on observations of invariable antecedence and consequence, as stated above. Brown shows how observations of antecedence and consequence can always be linked to physical and mental events. In the second part, he argues that many philosophical beliefs about the causal relation are based on delusion. The language that we use to describe cause and effect, he argues, following Hume, Reid, Stewart and others, is metaphorical, and as such, easily leads to error. Hence, we talk of causal 'powers', although this is just another name for an effect that is perceived as an antecedent circumstance. Next Brown explains what he takes to be the real circumstances in which belief in the causal relation arises. In this part of his analysis, he virtually repeats the appeal to intuitive and immediate belief first proposed in 1805. And, it is primarily this view, rather than his philosophy of mind, that the critics continue to light upon after the 1818 publication. Brown's analysis, it will be recalled, is based on the claim that belief in antecedence and consequence can arise only in connection with experience. That is, there is no sense in which belief in causality arises as a result of reasoning or as a consequence derived from an *a priori* axiom of sufficient reason or any other axiom concerning physical forces. In the final section of the book, Brown argues that the customary connection noticed by Hume is what enables us to separate causal events from irrelevant circumstances. However, contra Hume, Brown argues, it is not the transition from one idea to the next that produces the belief in causal connection. Here again we see evidence of Brown's earlier doctrine. In sum, Brown's 1818 work supplements the 1805 analysis, offering an explanation of the mental operations that give rise to belief in cause and effect. This explanation is ultimately grounded in the different feelings that arise in conscious experience. Since some of the feelings that arise in us lead irresistibly and

intuitively to the belief that there is an external world of causes producing effects in us, we are compelled to form beliefs about external causes.[cccIxx] Thus, the 1818 treatise represents an embellishment of his 1805 theory, and appeals to his more recent work in the philosophy of mind in support of his earlier view.

The reception of Brown's 1818 *Inquiry* was mixed, and several important figures gave negative reviews. Victor Cousin remarked in his *Remains de M. de Biran* that Brown's theory is 'a fantastical one, and destructive of all true metaphysics'. John Herschel's comment in his *Cabinet Cyclopedia* article on Astronomy is even more explicit. As Herschel writes, 'the whole train of argument is vitiated by one enormous oversight; the omission, namely, of a distinct and immediate personal consciousness of causation, in his enumeration of that sequence of events, by which the volition of the mind is made to terminate in the motion of material objects.'[cccIxxi] And, Richard Blakey, a great admirer of Mary Shepherd's work, echoes her own view when he identified the source of the problem in Brown's 'peculiar ideas' on cause and effect and their atheistic consequences. Specifically, the problem is that for Brown,

> The cause of a thing is only the immediate invariable antecedent in any sequence, while the immediate invariable consequent is the correlative effect. It is somewhat surprising that a doctrine of this kind should have met with so much encouragement in the northern part of the kingdom; fraught, as it evidently is, with the most absurd and dangerous consequences.[cccIxxii]

Brown's 1818 *Inquiry* may not have received universal acclaimed in its day, but it did garner respect in some circles, and it bears on our understanding of Shepherd's response to Hume. Its publication was a reminder that the fall-out from Hume's challenge to the doctrine of causality was far from over. On the one hand, there were the outstanding conceptual issues concerning causal knowledge. On the other hand, there were related social and religious questions concerning the causes of civil unrest and the proper bounds of civil liberty. Mme de Staël's posthumously published work of 1818, entitled *Considérations sur les principaux événements de la Révolution française,* had the working title in 1816 of *Des Causes et des Effets de la Révolution Française*, the sort of title, which suggests just such a connection of ideas.[cccIxxiii] Indeed, the themes of abstract analysis of causality and social unrest were very often combined, sometimes in all seriousness, and sometimes not. Mme de Staël's working title is likely tongue-in-cheek, and so too is Richard Whately's 1819 contribution entitled *Historic Doubts Relative to Napoleon Buonaparte.* The latter work is a humorous contribution that identifies the fallacies underlying debates on Hume and causality. Highly entertaining and topical, the book also poses a philosophical challenge to Hume's supporters. An enormously popular work, it drew on the 'universal scepticism' engendered by Hume to undermine the sceptic's belief in the existence of Napoleon Buonaparte.[cccIxxiv]

To begin, Whately's *Historic Doubts* points out that most of the evidence concerning Napoleon comes from newspaper reports. These reports are treated as pieces of evidence about Napoleon and his existence. Traded around from one newspaper to the next, they eventually take on the form of appeals to the masses. This evidential problem is complicated by the fact that we are not normally in a position to verify newspaper reports about Napoleon, and so we can't appeal to personal testimony as support for the newspaper claims. Moreover, those who claim to have visited Napoleon, Whately notes, could well be deceived about the testimony of their own senses. After all, how do they know that the person that they have seen is Napoleon? Another important consideration that raises doubt about Napoleon, is the fact that various media reports palpably contradict one another on important points. Finally, it is well to keep in mind, says Whately, that the defenders of liberty and publishers could easily have conspired to fabricate the stories about Napoleon in support of their cause.

Having thus cast doubt on the belief in Napoleon, Whately formulates his philosophical challenge,

> Let those who pretend to philosophical freedom of inquiry, who scorn to rest their opinions on popular belief, and to shelter themselves under the example of the unthinking multitude, consider carefully each one for himself, what is the evidence proposed to himself in particular, for the existence of such a person as Napoleon Buonaparte.[cccLxxv]

Whately goes on to congratulate those who believe without good reason on their 'easy faith', and to question how those who affirm the existence of Napoleon, when the evidence is blatantly contradictory, can nonetheless profess disbelief in miracles. In his *pièce de résistance*, he includes a mock Biblical extract starring Napoleon as God.

> And when Napoleon saw that the kingdom was departed from him, he said unto the rulers which came against him, Let me, I pray you, give the kingdom unto my son: but they would not hearken unto him. Then he spake yet again, saying, Let me, I pray you, go and live in the island of Elba, which is over against Italy, nigh unto the coast of France; and ye shall give me an allowance for me and my household, and the lands of Elba also for my possession. So they made him ruler of Elba. [cccLxxvi]

After much amusement, Whately gets to his main point. He says, 'I do not pretend to *decide* positively that there is not, nor ever was, any such person; but merely to propose it as a *doubtful* point...'.[cccLxxvii] In fact, his goal is to shift the burden of the doubt onto the sceptic, and to challenge the sceptic to justify his own beliefs based on causal inference.

> I call upon those therefore who profess themselves advocates of free inquiry -- who disdain to be carried along with the stream of popular opinion, -- and who will listen to no testimony that runs counter to experience, -- to follow up their own principles fairly and consistently. Let the same mode of argument be adopted in all cases alike; and then it can no longer be attributed to hostile prejudice, but to enlarged and philosophical views.[cccLxxviii]

Hume, of course, admitted that he had no philosophical justification for his own credulity. But in Whately's closing argument, he charges that sceptics who continue to believe in such mundane things as the existence of Napoleon should either admit inconsistency or give up scepticism. 'If after all that has been said, they cannot bring themselves to doubt of the existence of Napoleon Buonaparte, they must at least acknowledge that they do not apply to that question, the same plan of reasoning which they have made use of in others; and they are consequently bound in reason and in honesty to renounce it altogether.'[cccLxxix]

The approaches of Brown and Whately are significant to understanding the contribution of Mary Shepherd. For not only does Mary Shepherd reject Brown's appeal to intuition, which she thinks of as leaving the door wide open to sceptical doubt; she also objects to the purely deductive approach in Whately, which see sees as having limited application in empirical investigations.

3.3 The Trials of Carlile and Leslie

There is still more to the story leading up to the publication of Mary Shepherd's 1824 treatise. For, in the years directly preceding the 1824 publication, Lady Mary Shepherd's life was once again filled with the same controversy, persecution, and party politics that had prompted the Leslie affair in 1805. This time, however, circumstances conspired to place her near relations at

the center of what must have been a very unpleasant business, the prosecution of Richard Carlile in 1819 for the publication of Paine's *Age of Reason*. We begin, then, the next part of our account with circumstances surrounding the trial and prosecution of Richard Carlile in London. However, our story leads us back to the Edinburgh of 1820, and to another *Summons*, the summons of William Blackwood to court for publishing slanders against John Leslie. It turns out that the two Carlile and Leslie trials bear circumstantial and social connections, and that the antagonisms that they aroused re-opened the old wounds dating back to the days of the original Leslie controversy.

In 1819, Mary Shepherd's father-in-law, Sir Samuel Shepherd, was King's Advocate, or Attorney General, under the Regent, Prince George. The mood in England was quite revolutionary, much more so, in fact, than in the early days of the French Revolution. The Industrial Revolution had led to widespread job loss in Britain, and the combination of land enclosure, expensive wars, poor agricultural yields, and taxes meant that the people of Britain were literally starving. To make matters worse, sinecures and offices connected with colonization were reserved for the rich, who began to achieve unprecedented levels of wealth. The so-called 'Luddites' took up the cause against industrialization, organizing an underground militia to lead mobs in looting and burning the homes and factories of the wealthy. Although the general level of discontent grew frightening, the majority of aristocrats persisted in voting down proposals for much needed reforms. Unwilling to yield concessions to the people, the terrified aristocracy sought comfort in escape, debauchery, and commiseration. At about this time, we find Lord Grey writing to Lord Holland that 'We shall see, if we live, a Jacobin Revolution more bloody than that of France.'[cccclxxx] After decades of failed attempts at reform, the French Revolution had suggested a solution to the English, and by 1819, revolutionary aspirations appeared daily more threatening:

> This was a year of great commercial distress, of riots, demonstrations, and uprisings ever increasing; with unflinching resistance on the part of the Government. In January, Henry Hunt presides over a great Reform meeting in Manchester. In July, Birmingham elects Sir Charles Wolsley as its representative. He is very soon arrested, and becomes long a popular hero. In August, took place the Manchester demonstration that led to the Peterloo affair, for which Hunt and many others were apprehended. In December, Parliament passed the famous Six Acts of Castlereagh, against sedition and libels.[ccclxxxi]

As the aristocracy grew hysterical with fear of widespread social unrest, many of those who had earlier avowed support for the French grew silent or adopted the conservative rhetoric. The monarchy had turned its back on liberalism in all its forms, and adopted a conservative stance. In an effort to prevent incendiary material from reaching the public eye, strict publication laws were introduced and enforced. Many journals responded by becoming increasingly conservative or equivocal, out of fear of being charged with treasonable offenses. The matter of publication bans became controversial, and when Richard Carlile defiantly published Paine's *Age of Reason*, Prince George insisted on a public shaming for this insubordination, including eventually, imprisonment for both Carlile and his wife. The man who would do the honors in this prosecution was Sir Samuel Shepherd himself.

Whether Sir Samuel Shepherd enjoyed the task of prosecuting on behalf of the King is doubtful. Among the Shepherd family's personal friends were included publishers, the full spectrum of Whigs, a few Tories, and a select group of Westminister radicals. Given this variety of social ties, navigating between social and official lives would have been enough of a challenge; but as crown prosecutor, Sir Samuel Shepherd was also in peril for his own life. Once, after having obtained some convictions for treason, Sir Samuel was waylaid by an angry mob at the door of Westminster Hall. When urged to follow a discreet route home, Sir Samuel objected with

bravado. In the end, he was forced to flee in security.[ccclxxxii] His home residence was also targeted. Forewarned of the attack, Sir Samuel's wife had prepared a 'great quantity of good cold tea, well sweetened with brown sugar' and collected 'as much provision of plain substantial food as possible' including 'meat, bread, butter, cheese, milk' into the house. Having eaten the food, 'the mob trooped out at the front, several expressing their opinion that "Shepherd is a very good fellow after all."'[ccclxxxiii]

Such events, and particularly the Carlile prosecution, must have been stressful. Sir Samuel was severely criticized for his role in the trial, and especially for the fact that the counts filed against Carlile were manufactured by the 'Society for the Suppression of Vice'. As Richard Carlile complained, 'the prosecuting parties' designed to 'give the information an air of importance' by 'acting in concert'.[ccclxxxiv] The counts themselves related specifically to the text of Paine's *Age of Reason*, which Carlile was held responsible for publishing and distributing. The counts were repetitive, and all related to the Old Testament.[ccclxxxv] For Paine had claimed that the Old Testament was full of 'obscene stories', 'voluptuous debaucheries', 'cruel and torturous executions' and 'unrelenting vindictiveness'. The book, according to Paine, 'is a history of wickedness that has served to corrupt and brutalize mankind'.[ccclxxxvi] It contains 'lies, wickedness and blasphemy' and so 'many absurdities and contradictions' that it is 'impossible to find in any story upon record, so many and such glaring absurdities, contradictions, and falsehoods'.[ccclxxxvii] Paine ridicules the story of the Virgin Mary, saying that this 'debauchery by a ghost' under 'impious pretence' is 'blasphemously obscene'.[ccclxxxviii] He also questions why all of humanity has not perceived the truth of Christianity, charges that Priests seek to stifle inquiry, says that the Bible is a romance devoid of historical truth, and so on.[ccclxxxix]

Sir Samuel Shepherd's name arose often in connection with the trial. To many, even those who supported free press, Paine's religious blasphemy had crossed the line from sincere inquiry to uncompromising infidelity. The following remark, made by J. Mills during speeches delivered at the Crown and Anchor Tavern's British Forum, 'Ought R.C. to be Censured?', implies that Sir Samuel's role in the trial was hypocritical:

> Some will naturally be more sceptical than others, according to their means of forming a sound judgment; but of all men living, I should think an English Attorney-General the least likely to have very orthodox notions upon the subject of religion, if these notions are to be attained by translations of the Bible or attendance at church.[cccxc]

Despite the shock value of what Paine had written, many supported his right to raise questions. As one author wrote, Paine's charges can be taken 'as a challenge that can be answered by Reason', that affords 'an opportunity to sharpen our arguments'.[cccxci] In fact, one of Sir Samuel Shepherd's closest friends, Thomas Erskine, fellow advocate and courtier, was famous for his advanced liberalism in successfully defending Paine himself from charges in connection with his *Rights of Man* in the 1790's. Erskine was one of the many liberals sympathetic to the French Revolution in its early days. So, it is curious to notice that while Sir Samuel Shepherd was famous for having *prosecuted* Carlile for publishing Paine in 1819, that in 1792, Thomas Erskine became famous for his *defense* of Paine. In 1792, Thomas Erskine provides a sympathetic portrayal of the helplessness of the average citizen in the face of an absolute authoritarian. As Conway reports in his *Life of Paine*, Erskine's speech in defense of Paine told the story, taken from Lucian, of Jupiter and the countryman: 'The countryman listened with attention and acquiescence, while Jupiter strove only to convince him; but happening to hint with his thunder. 'Ah, ha!' says the countryman, 'now, Jupiter, I know that you are wrong; you are always wrong when you appeal to your thunder.' 'This', concluded Erskine, 'is the case with me. I can reason with the people of England, but I cannot fight against the thunder of authority."[cccxcii] But by 1819,

the British aristocracy lived in a very real fear of Luddites and of revolution. Sympathy for the people had long ago been tempered by the alarm of social unrest, and the bravado of 1792 would have been unpalatable to the members of Parliament and the Prince Regent alike. And so, the official line of Samuel Shepherd in 1819 is quite the opposite of Erskine's, and aims to inspire fear of social activism and its consequences -- and to suggest in particular that a treasonous and irreligious tenor would not be tolerated.

By 1819 then, the unofficial policy seems to have been one of political quietism. Liberal ideals were to be kept in their place and a conservative political agenda prevailed.
One commentator bitterly remarks that Carlile goes to court 'with the whole weight of Government against him', and that the trial will merely 'put money into the pockets of the Attorney and Solicitor-General'.[cccxciii] In an open letter to Sir Samuel Shepherd, it is pointed out that with three prosecutors against him, little by way of counsel, and a judge interrupting all train of thought, Carlile would not stand a chance.[cccxciv] And so went the pamphlets, letters, and indictments. Friends of Sir Samuel who had landed themselves in similar positions of authority wrote sympathetic and reassuring letters, saying that he had, after all, simply done his duty. And this was how Sir Samuel himself saw the matter. His own words were, 'I am not going to be afraid of an angry mob when I have done my duty'.[cccxcv] Whatever his personal views on the propriety of the prosecution, whatever thoughts and words may have passed between friends on the subject in private, as Attorney General, Sir Samuel would have felt that he had no alternative but to prosecute on behalf of the Prince Regent. Yet, in the midst of the year's events, in June 1819, Sir Samuel gave up his position as Attorney General. He declined offers of Chief Justice, Home Secretary, and also refused to act as the Prince Regent's attorney in the divorce of Queen Caroline. The Prince Regent gently mocked Sir Samuel's sensitivities, saying, 'Shepherd, Shepherd, you are the honestest man in England, and the worst courtier in the world.'[cccxcvi]

Given the controversies of the day, it was probably with considerable relief that Sir Samuel left London for Edinburgh, and took up the role of Lord Chief Baron of the Court of Exchequer for Scotland.[cccxcvii] However, Sir Samuel's worries may not have ended with his removal to Edinburgh. For there ensued shortly thereafter a series of vicious and slanderous attacks on John Leslie, attacks that amounted to an ongoing persecution of Leslie by the press, and that led to the trial against William Blackwood. The attacks against Leslie were initiated in the November 1819 issue of *Blackwood's Edinburgh Magazine*, No. XXXII. There, Leslie was accused of a slur against the Hebrew language. The slur was located in a note about numeration in ancient Hebrew, a note to the text of Leslie's 1817 *Philosophy of Arithmetic.* In the note, Leslie says that Hebrew is 'the rudest and poorest of all written languages' because in representing the higher numbers, ancient Hebrew 'has recourse to the clumsy expedient of addition'.[cccxcviii] The remark went unnoticed until 1819, when Leslie moved from his Chair in Mathematics to the Chair in Natural Philosophy. Given the theistic overtones of the 1805-6 scandal, it is no coincidence that the *Blackwood's* attack claimed Leslie had made a slur against *'the language of the Old Testament;* -- the language, as a philosopher like Hume, or a partizan of Mr Hume's, would say, dedicated to superstition...'.[cccxcix] Nor can it be coincidence that the charge involved a note to a scientific text, or that *Blackwood's Edinburgh Magazine* No. XXXV included a note about Leslie's erroneous use of the word 'cause'.[cd] These aspects of the new episode, in addition to explicit connections made during the trial by the defense council for Blackwood, clearly establish that the later attacks represented an ongoing persecution of Leslie:

> A man who would go out of his path, on an inquiry on the nature of heat, to *recommend an impious work*; and, in a Treatise on Arithmetic, to cast an ignorant sarcasm on the *language of the Bible*, or to *sneer* at the *fancies of one of the Apostles*, *must ever be an object of*

> *suspicion to those who hold the Scriptures in honour*... We have no assurance that he may not digress as culpably hereafter, and if he does so, it is only fair to give him warning that I shall take care to point it out.[cdi]

It was at first rumored that John Gibson Lockhart, a conservative Christian who was son-in-law to Walter Scott, had penned the original attacks on Leslie for *Blackwood's*.[cdii] Lockhart, however, denied the authorship, and the matter was dropped during the trial. By then, the author of the attacks was widely believed to have been John Wilson, then the candidate in place to succeed Dugald Stewart and Thomas Brown in the Chair of Moral Philosophy. For the attacks on Leslie had been penned in a pretended letter to 'Christopher North', which was John Wilson's pseudonym.[cdiii] John Murray, the London-based publisher and family friend of the Shepherd's, was also indirectly connected with the trial's events. Murray had originally been Blackwood's partner and London publisher for the magazine. When, in December 1819, it was reported that, Mr Murray and Mr Stewart were not on good terms, the reason is likely the connection between Murray, Blackwood and Wilson. 'Mr Stewart is now resolved upon leaving him [Mr Murray] about Christmas...Mr. S. is decidedly of opinion that the person you heard of as most likely to succeed [John Wilson], is by no means equal to the situation, and Mr S. intends to tell Mr. Murray as much. Mr. M. and Mr. S. are not so cordial as they were a few weeks ago, but this is no matter of surprise. I have still some hopes from that quarter, but I confess that they are not very sanguine.' [cdiv] Indeed, much to the chagrin of Stewart and others, John Wilson did in fact succeeded to the Chair in Moral Philosophy in 1820. Macvey Napier expressed his distaste for Wilson, saying in a letter to James Mill dated 11 May 1820, that 'it makes one sick to think of him.' Napier then justifies this dislike, explaining that Wilson is likely to persecute those with unorthodox views:

> Instead of delightful exhortations to mental enterprise, and to press forward unceasingly to new attainments, to which I listened with rapture from the lips of Mr Stewart, the unfortunate youth will hear from the man in question nothing but exhortations to the implicit adoption of opinions already received, and to hate and persecute every man who shows a disposition to go beyond them.[cdv]

During the trial, Leslie's supporters quickly rallied behind him. But new and old wounds were opened for all those involved in the earlier Leslie controversy. Leslie, with his 'dangerous philosophy' had just moved to the Chair of Natural Philosophy. John Wilson, conservative Christian and probable author of the attacks on Leslie, had just succeeded to the Chair of Moral Philosophy, winning despite competition from at least one real genius, namely, Charles Babbage, who was very likely Dugald Stewart's preferred candidate.

As the local antics make evident, the absurdity of the situation, particularly in view of the history associated with Edinburgh's university appointments, led to mockery. One newspaper advertisement states that on 16 December 1820, 'under the patronage of Queen Caroline', is to be hosted, the 'Grand Exhibition of the New Heathen Mythology'. Stars included, among others, James Moncrieff, Francis Jeffrey, John Murray, Henry Cockburn and John Leslie, who is singled out for the role of the female goddess Venus![cdvi] The advertisement ends with the exclamation 'Vivat Regina!' -- surely a sardonic reference to Queen Caroline's ongoing public trial for adultery, an indignity that she had to endure, but that was met with considerable sympathy on the part of her many supporters.[cdvii]

One cannot help but notice that the main text at issue in the Leslie trial concerned mathematics, and that Leslie's note concerned the language of the Old Testament. There is a resonance here with the Carlile prosecution for 'scandalous, impious, and blasphemous libel, of and concerning

that part of the Holy Bible which is called the Old Testament.'[cdviii] There is also a resonance with Kerr's 1807 rhetorical question, 'Is there no law in this kingdom for punishing a man for publishing a libel against the Almighty himself, and for endeavouring to seduce all the rest of mankind to join with him, for the purpose of overturning his government?'[cdix] To an extent, the appearance of convergence may simply be a sign of the times. Even so, one is hard pressed not to speculate on how the connections between the two trials would have appeared to Mary Shepherd and others involved in the Leslie affair. For the charges against Carlile and the attacks on Leslie both centered on the Old Testament, and Carlile's prosecutor, Sir Samuel Shepherd, had just taken up the position in Edinburgh when the renewed attacks on Leslie were initiated. Perhaps those responsible for Leslie's renewed persecution had Carlile's trial in mind as they schemed and gossiped against him. Indeed, how would the conservative rhetoric now supported by mainstream liberal and secular lawyers appear to those religious conservatives who, in 1805, had been publicly derided by the moderates of Edinburgh? Sir Samuel had justified the prosecutions on behalf of the King as the performance of duty. Might not the conservative ministers involved in the original Leslie affair have seen themselves as doing *their duty*? The recent prosecution of Carlile for his libelous blasphemy against the Old Testament must have appeared like the hypocrisy of political turncoats. It is true that the unrest of the times had forced many liberal minded individuals into silence or apparent conservatism. For by 1819, even literary journals such as the *Edinburgh Review* were playing it safe, supporting both Whig and Tory viewpoints, much to the irritation of the radical reformers, such as James and John Stuart Mill.[cdx] Fears of social unrest no longer seemed unfounded, and so political conservatism, or at least the appearance, seemed obligatory. The opportunity for the traditionally conservative to play up this apparent hypocrisy may well have been irresistible, and Leslie, apparently a magnet for trouble, was once again at the center of crossfire.

Leslie's libel charge against William Blackwood dealt with four general classes of attack, all of which related to the destruction of Leslie's character and reputation. The first charge concerned the general impeachment of Leslie's reputation as a philosopher and scientist. It reads: 'He is accused of ignorance and presumption, and even where his superiority as a man of science has been universally acknowledged, he has been treated as a plagiarist, as of secondary talents, and as deserving of contempt.'[cdxi] The second charge related to the claim that Leslie had dishonestly colluded with others to impose upon the public in publishing an essentially unchanged version of his 1817 *Philosophy of Arithmetic* as a new edition with a new publisher in 1820. The third charge was that Leslie's person had been maliciously ridiculed in order to lower his position in society and ultimately, to jeopardize his station. [cdxii] Finally, the last charge, which was perhaps the most significant of all, was that the attacks had injured Leslie's respectability as a public teacher and had depicted him as an enemy to religion and corrupter of the young men studying at the University of Edinburgh.[cdxiii]

With the overwhelming support of the legal and publishing community, and excellent arguments on his behalf, Leslie was handily vindicated in the legal trial. His council was comprised of the formidable team of Henry Cockburn, Francis Jeffrey, and James Moncreiff, and through them, liberal and moderate ideals won a partial victory in a very conservative political climate. The judges summing up the case found the first three charges in Leslie's favour. It is significant, however, that the fourth charge, the one relating to Leslie's corruption of the youth, was found in favour of William Blackwood. For, the fourth charge was tied to the requirement that Scotland's professors swear to the Westminster Confession of Faith. The argument that formed the basis for the judgement was premised on the claim that, as a university professor, Leslie held a public office, and that this entitled *Blackwood's* to launch a public attack of his habit of instilling principles contrary to Presbyterianism:

> The liberty of the press in this country is well known to you. We are at full liberty to discuss the public conduct of public men, and to attack or defend the measures of government, and to maintain the rights of the people through the medium of the press ... In like manner, if an instructor of youth in his discourses to his pupils, should instill into their minds principles contrary to the established faith, whether as a professor in a university, or as a private teacher; or, if the ministers of the Gospel in the pulpit (and the people of this free protestant country do not go to private houses to be instructed by their priests, but to church) should do the same thing, and we should find fault with them for doing so, through the medium of the press -- we do nothing but attack them in their public characters, and we are entitled to do so.[cdxiv]

This argument was apparently considered good enough for a ruling in favour of Blackwood. Thus, the trial left as outstanding issues, the matters of the Westminster Confession of Faith and freedom of conscience. In particular, it left open the question of whether religious oaths ought to be required of academics.

There can be little question that the renewal of Leslie's persecution would have brought back memories of the Edinburgh of old for Mary Shepherd. It is also likely that her reaction to the Leslie trial would have been further complicated by the recent events concerning Carlile and free press that had touched her immediate family. To make matters worse, the people of England did not soon forget the plight of Richard Carlile. The Benthamites, for example, are widely believed to have assisted Carlile throughout his long imprisonment. In 1823, John Stuart Mill anonymously contributed five letters concerning Carlile and 'the question of free publication of all opinions on religion' to local newspapers such as the *Morning Chronicle* and the *Traveller*. He also wrote letters and book notices on topics ranging from 'nonsense talked in Parliament', to 'defects of the law', and 'misdoings of the magistry or the courts of justice'.[cdxv] Over the next decade, the *Chronicle* increasingly came to voice the concerns of the utilitarian radicals, and much of their criticism was leveled at the legal system:

> The defects of the law, and of the administration of justice, were the subject on which that paper rendered most service to the improvement. Up to that time hardly a word had been said, except by Bentham and my father, against that most peccant part of English institutions and of their administration. It was the almost universal creed of Englishmen, that the law of England, the judicature of England, the unpaid magistry of England, were models of excellence.[cdxvi]

Thus, Richard Carlile's trial had long and lingering effects. So too did the Leslie trial. One of the central points of contention in both cases was the propriety of personal attacks. In fact, the divisions on the matter of personal attacks crossed political boundaries, and, in some cases, longstanding friendships were eventually strained or dissolved. At the invitation of Macvey Napier, for example, the young Whig, Thomas B. Macaulay, submitted an unfavorable review of the utilitarian radical James Mill's 1820 *Essays on Government*.

Macaulay's critique appeared in an 1829 issue of the *Edinburgh Review*. The basis for the critique was conceptual, although the motivation was partly political. Philosophically, Mill had argued that a deduction from the fixed principles governing human nature could provide the basis for a science of government, and hence a basis for understanding social and political order. Macaulay raises a fundamental objection to Mill's proposal of a deductive 'Science of Politics' in which psychological characteristics are linked to good or bad government. Macaulay charges, 'that it is utterly impossible to deduce the science of government from the principles of human nature'[cdxvii] 'How, then', he asks, 'are we to arrive at just conclusions on a subject so

important to the happiness of mankind'?[cdxviii] The answer, Macaulay proposes, is by the method of experimentalism, that is, the method of induction:

> Surely by that method, which, in every experimental science to which it has been applied, has signally increased our power and knowledge of our species ... by the method of induction; - by observing the present state of the world - by assiduously studying the history of past ages, by sifting the evidence of the facts, -by carefully combining and contrasting those which are authentic, - by generalizing with judgment and diffidence, - by perpetually bringing the theory which we have constructed to the test of new facts, - by correcting, or altogether abandoning it, according as those new facts prove it to be partially or fundamentally unsound, Proceeding thus - pateintly, - diligently, -candidly...[cdxix]

The implications of Macaulay's critique were more than conceptual. For the Whig and radical responses to the political uncertainty of the times, and, in particular, to the propriety of personal attacks, differed. Indeed, the divergence underlying their approaches to reform had by the late 1820s grown pronounced, and had become a source of dissent. James Mill, formerly a contributor and friend to the *Edinburgh Review*, had since taken an uncompromising stance on political reform, and so became a target for the increasingly neutral and equivocal literary organ. The Macaulay article, in fact, marks the widening of a rift among defenders of political liberty who, at the turn of the century, had been conciliatory and compromising. John Stuart Mill would eventually take the conceptual basis for Macaulay's criticisms very seriously. Although the younger Mill would continue to accept his father's assumption that a 'political science' was feasible, he eventually abandoned the *apriorism* implicit in James Mill's political science in favor of a method based on empiricist generalization. All the while, John Stuart would remain a staunch defender of his father's political radicalism. In forming a younger generation of radicals, he proposed a philosophical radicalism founded on knowledge of social causes and effects, where such knowledge is based in empirical generalization. Thus, a 'philosophical radical' was someone, 'who when they are discussing means begin by considering the end, and when they desire to produce effects, think of causes'. As such, the philosophical radical traces political problems back to original causes -- the aristocracy, the system of parliamentary representation, and so on.[cdxx] Indeed, John Stuart Mill accepted the view that human character was a product of circumstances, and based much of his inquiry on the assumption that social factors influenced the development of both individuals and nations. He dubbed his own political science 'Ethology', its fundamental assumption being that it is possible to identify from among the myriad factors, specific causes that influence the formation of individual and national character.

Whether political 'science' was to be attained through deduction from the principles of human nature, as James Mill supposed, or by heterogeneous mixture of speculative and empirical thought, as Kerr would put it, or by empirical generalization, as John Stuart Mill argued, it was grounded on a single assumption. Namely, the assumption that there were identifiable causal relations holding between individuals and the social order that can be discovered through scientific investigation of the causes. Presumably, it is this same basic assumption about causal factors underlying individual and national character that is implicit in Kerr's attacks on Leslie, Malthus, and the common law. However different the two Mills and Kerr might otherwise seem, the general and underlying assumption that individual and national character can be shaped given correct manipulation of the relevant causes is implicit in all three thinkers. It is perhaps this set of assumptions that explains the occasional remark, that the radicals were the 'best friends' of the monarchy.[cdxxi] For their view actually supplies a *justification* for limiting free speech, since it presumes that there are identifiable and discoverable harms to society.[cdxxii] Taken together, the national social unrest, the assumptions implicit in Ethology, and the outstanding

philosophical questions about the causal relation, help to explain the return to foundational issues surrounding the logic of induction. In particular, the set of assumptions relating to causality and the social order gave rise to new questions, and sometimes to derision, in the philosophical debate surrounding causal necessity.

The complexity of social ties and of the political times makes it very difficult to say just where Mary Shepherd stood in connection with the Carlile and Leslie trials. It is simply not an easy matter to decide who supported whom from a distance. It is clear that she knew Leslie, for in a letter written to Charles Babbage in 1832, Lady Mary mentions a discussion with Leslie over a dispute about the latitude and longitude of the magnetic poles.[cdxxiii] She ends the letter with a teasing suggestion of irony: 'pray what is the true faith?'. Given the context of the aside, it seems very likely a reference to Leslie and his religious persecution. Perhaps, Mary Shepherd shared the feelings of Macvey Napier, who said that Leslie's remarks may have been worrisome to the pious, but that the proceedings against him were unfair.[cdxxiv] One thing that is certain is that many of Leslie's supporters were friends of Mary Shepherd. Moreover, we know that Mary Shepherd's social circle included Whigs of every stripe, philosophical radicals, and atheists; so, her social set was decidedly open-minded.[cdxxv] At the same time, Blakey describes Shepherd in a way that leaves the question of her religious convictions unambiguous. As Blakey notes in his *A History of the Philosophy of Mind*, the view of causation espoused by Hume and Brown 'appeared to Lady Mary Shepherd to lead by an inevitable consequence to downright Atheism':[cdxxvi]

> When she undertook a public refutation of these erroneous notions of cause and effect, it must be remembered it was at a time when they were most rampant, and widely spread over the northern parts of Britain in particular. Every young man who came from the Universities of Scotland, attempted to show off his subtlety and academic lore, by denying there was any real causation in the world; all was mere imagination, and a piece of gross vulgar credulity.[cdxxvii]

Given the evidence, it is fair to draw the conclusion that Mary Shepherd's personal convictions may well have been narrower than those of many in her social circle. She was certainly of a religious persuasion. But it is hard to believe that she herself could have adopted the same irrational fears and persecuting stance as some of the more orthodox and conservative thinkers. Otherwise it is almost impossible to imagine her socializing with the individuals who frequented her salon. It is difficult to imagine, for instance, a truly narrow-minded person allowing her daughter to discuss Divine love with Charles Babbage, whose response to her daughter's proclamation of faith was that, 'I would give ten thousand worlds, if I had them, to believe what you do!'[cdxxviii] It seems more likely that Mary Shepherd, like many in her social set, was a strong defender of liberty and freedom of conscience, and an opponent of both persecution and party politics. Like many of her associates, she would probably have adopted a cautious approach to politics and the press in view of the growing social unrest in Britain in 1819. All of this is consistent with her having had strong religious convictions. Indeed, it is not hard to imagine that Mary Shepherd has some very specific religious views, but that she was also open to all forms of legitimate dialogue and reasoned argument.

One plausible interpretation of Mary Shepherd's attitude toward free press and free inquiry is that she so firmly believed that rational discourse would lead to proof of theism, so that she did not fear placing her faith in reason. In this regard, Mary Shepherd's youthful interest in Milton may be illuminating. In his 1644 *Areopagitica,* Milton, notes that freedom of the press is a matter of religious and civil concern; for books are not 'absolutely dead things', but active and potent 'as the soule was whose progeny they are'. Having acknowledged this, Milton appeals to God,

reason, and humanity, in a moving defense of freedom of the press:

> And yet on the other hand unlesse warinesse be us'd, as good almost kill a Man as kill a good Book; who kills a Man kills a reasonable creature, Gods Image; but hee who destroys a good Booke, kills reason it selfe, kills the Image of God, as it were in the eye. Many a man lives a burden to the Earth; but a good Booke is the pretious life-blood of a master spirit, imbalm'd and treasur'd up on purpose to a life beyond life. 'Tis true, no age can restore a life, where of perhaps there is no great losse; and revolutions of ages doe not oft recover the losse of a rejected truth, for the want of which whole Nations fare the worse. We should be wary therefore what persecution we raise against the living labours of the publicke men, how we spill that season'd life of man preserv'd and stor'd up in Books; since we see a kinde of homicide may be thus committed, sometimes a martyrdome, and if it extends to the whole impression, a kind of massacre, where of the execution ends not in the slaying of an elementall life, but strikes at that ethereall and fift essence.[cdxxix]

Milton's defense of freedom of the press is based on his faith in a harmony between truth and religious belief. 'For who knows not that Truth is strong next to the Almighty; she needs no policies, nor strategems, nor licencings to make her victorious, those are the shifts and the defences that error uses against her power: give her but room, & do not bind her when she sleeps'.[cdxxx] Thus, as an ultimate testimony to faith, truth must be allowed free reign; for, it is through reason that God will become better known to us. That such an attitude could also describe Mary Shepherd should not be surprising. Although she may well have had serious reservations about promoting religious infidelity or civil unrest, the ideal of free inquiry, when coupled with the optimistic conviction that science would, in the end, support revelation, would have been sufficient to dispel such fears. Thus, the quotes from Milton may well capture the inspiration behind Shepherd's philosophical work. One way or another, it is clear from Mary Shepherd's own texts that she intends to settle conceptual matters by appeal to reason, and not by persecution.

3.4 The Causal Relation Reconsidered

Shepherd's views on causality are framed with reference to both Hume and his critics. She rejects, for instance, the analysis of causality in Brown's reply to Hume. The difficulties she sees in Brown's 1818 *Inquiry* are foundational; indeed, she rejects the appeal to intuition as a basis for an account of causality. With such a dubious foundation, a view such as Brown's presents an obstacle rather than an aid to theism. So too was the outdated scholastic approach rejected. Shepherd also has reservations about Whately's deductive method, although the limitations of Whateley's work differ from those associated with either the appeal to intuition or scholasticism. Whately's *Elements* garnered high acclaim as a 'standard' logic, and his eccentricity and wit had endeared him to many; however, as his biographer, Alexander Campbell Fraser, laments, Whately was unable to embrace the new inductive logic.[cdxxxi] It is true that in the first half of the nineteenth century, established logicians disagreed on the appropriate applications for deductive and inductive proofs, and that, as a paradigm for knowledge acquisition, inductive reasoning had its detractors. But those at the forefront of thinking on science and scientific method were convinced that inductive methods were of great significance. By the min-nineteenth century, induction was quickly gaining ground, under the influence of John Herschel, William Whewell, John Stuart Mill, William Hamilton, and others. Thus, though there was dispute concerning the context in which inductive methods were appropriate, all in all, it was a time of creative exchange of ideas on the subjects of induction and the scientific method, particularly among

Mary Shepherd and her friends.

Unlike the eccentric Whately, Shepherd does not want to rely on an exclusively deductive approach in her analysis of causality. That said, the influence of Whately is quite evident. Shepherd frequently relies on a traditional form of metaphysical repartee in which fallacies, logical errors, and questionable assumptions are ferreted out of metaphysical treatises by deductive analysis. This deployment of deductive argument is apparent from the outset of the 1824 treatise, where she lists her five propositions to be demonstrated against Hume.[cdxxxii] Recall, the five propositions, modelled on Brown's:

> FIRST, That *reason*, not *fancy* and 'custom', leads us to the knowledge That everything which begins to exist must have a Cause. – SECONDLY, That *reason* forces the mind to perceive that *similar causes* must necessarily produce *similar effects*. – THIRDLY, I shall thence establish a more philosophical definition of the relation of Cause and Effect. – FOURTHLY, show, in what respects Mr. Hume's definition is faulty. – FIFTHLY, proceed to prove that Nature cannot be supposed to alter her Course without a contradiction in terms; and, finally, show that *Custom and Habit* alone are not our guides; but chiefly reason, for the regulation of our expectations in ordinary life.

The discussion of these propositions forms the framework for Shepherd's critical response to Hume. In many instances, when she aims to simply establish weaknesses in Hume's arguments, she follows Whately's style of locating fallacies and controversial assumptions. This is evident in her critical commentary in discussing her first proposition, "That *reason*, not *fancy* and 'custom', leads us to the knowledge 'That everything which begins to exist must have a Cause.'" Against Hume, she claims that the causal axiom follows from the impossibility of conceive of causes and effects existing apart in nature without contradiction.[cdxxxiii] Taken as a bald assertion, that is, without an appreciation for Shepherd's positive doctrine of causality and its 'manner of action', her position is hard to fathom. For, as we shall see, Shepherd always has in view an alternative account of how causality is discovered as an objective and *a priori* feature in representation. But even without a full appreciation of her view, we can at least document her style of deductive analysis in critically evaluating Hume. She reasons, for instance, that when Hume denies the causal axiom, he asks us to imagine an effect 'non-existent this minute' and 'existing the next'. In saying as much, Hume 'has no other way of supporting his own notion of the beginning of existence by itself', she continues, except under the idea of 'an effect in suspense'. This supposition, she says, 'begs the question for the necessity of its correlative, i.e., its cause'. In this argument, and elsewhere, we see Whately's logic put to use in an attempt to undermine Hume.

There are, of course, many examples of similar deductive arguments in Shepherd's work. In discussing her fourth proposition, for example, she disagrees with Hume, who defines 'causality' in terms of antecedence -- the very mark that Leslie's etymology of the word 'cause' attributes to 'sophistication' in a language. Shepherd's view is that Hume's doctrine rests on a faulty analysis of causation in terms of *temporal* 'antecendency' and 'subsequency'. Hume is wrong, Shepherd reasons, to say that noticing the temporal order of sensible qualities is an essential characteristic in the formation of causal judgements. Contra Hume, she maintains that it is sensible qualities that give rise to ideas of invariable sequences, and that compound objects have ideas of causes and sensible qualities included within them *in the very moment of formation*. As such, the view that temporal succession is essential to the definition of causality is just a by-product of our abstract analysis of the causal relation in the representational object.[cdxxxiv]

Shepherd's full response to Hume is founded on an alternative account of how causal necessity is discovered and then justified as an objective and *a priori* feature in representation. Her argument for causal necessity recognises and responds to perceived limitations of a deductive paradigm; for, Shepherd's draws on an account of experimental reasoning involving both inductive and deductive methods. Shepherd is among those at the forefront of the new thinking on induction and she uses her method to directly engage the arguments against the two alternative accounts of causal necessity proposed by Hume. One of these accounts is that the idea of a necessary connection between causes and effects arises from a logical sense of causal connection. The other is that our idea of necessary connection between causes and effects arises from a non-logical sense of necessary connection. The first alternative Hume denies for the reason that effects cannot be deduced from causes prior to experience such that we can know that one kind of cause is invariably linked with one kind of effect. Hume also denied the plausibility of the second alternative, concluding instead that it is a subjective fiction of mind that leads humans to ascribe causal necessity to nature. Hume's argument against the second alternative amounts to the claim that when he inspects his mental experiences, he finds that neither perception nor acts of will contain an element of necessity.[cdxxxv] Shepherd rejects this dilemma, and argues that Hume relies on 'illogical' arguments and that his conclusions that are 'untrue'. Shepherd's response to Hume, of course, is that we do have knowledge of causality, and that it is grounded in a form of experimental reasoning. There are two parts to her argument against Hume, and each has two steps. The first part establishes as a 'universal axiom', on the order of a law of thought, that 'Like effects must necessarily have like causes'. The second part establishes that causal hypotheses also contain necessity. Both the universal axiom and causal hypotheses arguments are established through Shepherd's experimental reasoning, which involves a two-step method. The first step is inductive, and the second step is deductive. For the sake of clarity, I shall consistently refer to the two parts of Shepherd's universal axiom and causal hypotheses arguments against Hume as 'parts', and the two steps of her method as 'steps'.

Like some of her contemporaries, Shepherd sees herself as invoking a methodology that combines induction and deduction in an experimentalism that both responds to Hume *and* that makes explicit the successes of empiricism nascent in the methodologies Bacon and Newton. Among those who would publish along similar lines, and whose work is helpful in illuminating the direction in which Shepherd's own thought was moving in 1824, are John Herschel and William Whewell, both of whom were part of the eminent group of scientists and intellectuals that former her social set.[cdxxxvi] Like Herschel and Whewell, Shepherd saw a need to supplement and elaborate on the Baconian method of induction. Herschel, for example, thought that the dominant Baconian model, with its appeal to agreement and difference, variations and residues, was an essentially correct, but incomplete picture of scientific method. This sense of building upon and revising a still revered Baconinan method is implicit in all three thinkers.

Herschel is credited with having introduced two distinctions; namely, the 'context of discovery' and the 'context of justification'. The context of discovery, he said, does not always resemble the context of justification; a wild guess can turn out to be right, and it is no less valuable or credible than deduced hypotheses once it has been observationally confirmed.[cdxxxvii] Another important point that Herschel made is that the context of discovery of laws of nature can be either inductive or deductive. An example of the former is Boyle's law, in which the correlation of properties is noticed through the assessment of a large sample of data. In the latter instance, laws may be discovered through the formulation of hypotheses. In such cases, laws are formulated in a kind of problem solving activity whereby the phenomena is 'saved' by the introduction of a hypothesis; however, the hypothesis must then be subject to independent testing. Finally, Herschel also pointed out the importance of observation to the confirmation of

laws and theories. Recognising the importance of the 'severe test' in the context of justification, Herschel realised that if a law can be shown to apply in extreme cases, which are nonetheless genuine tests, then there is a strong indication of confirmation. He also noted that instances of discovering that a law has a wider application than was initially thought turn out to provide additional confirmation. Thus, Hershel adopts a Baconian picture, but complicates it, adding emphasis on the role of creative imagination in discovery and the importance of severe tests in theory confirmation.

Hershel's principal modification to Baconian induction is his distinction between the contexts of discovery and justification. This distinction is also in Shepherd; though not fully articulated; is constantly invoked in her arguments. Both thinkers evidently see a greater need to distinguish the underlying logic of the contexts of discovery and justification than did earlier thinkers such as Bacon. We will next take a closer look at Shepherd's two-step method and its application in the two parts of her argument against Hume. We begin with the first part of Shepherd's argument against Hume, the part that establishes the universal axiom that 'Like effects must necessarily have like causes'. In establishing this axiom, Shepherd appeals to an experimentalism in which inductive reasoning forms the basis for the 'context of discovery', and deductive reasoning forms the basis for the 'context of justification'. For Shepherd, emphasis is placed on the discovery of causal necessity through introspective analysis of mental operations. As we shall see, justification for the causal axiom builds on this discovery, and follows when we apply a second deductive step. Thus, in justification, we build on the discovery of causal necessity, and proceed to a deductive argument in which it is impossible to deny the causal axiom. As such, in the context of justification, Shepherd, like Herschel, emphasises the 'crucial experiment'.

In terms of discovery, Shepherd's claim is that causal necessity is discovered through an introspective analysis of the processes underlying the 'manner and action of causation'. With this in mind, we can understand the first part of Shepherd's answer to Hume. Against Hume, Shepherd claims that an empirical act of introspection *does* lead the mind to the discovery of necessary connection. What she maintains is that ‘when the mind perceives by what passes within itself, that no quality, idea, or being whatever, can *begin* its own existence, it...perceives the general necessity of a cause for every effect’.[cdxxxviii] If this analysis of the process of the discovery of causal necessity is overlooked, it is easy to fail to grasp Shepherd's argument against Hume. Indeed, it might appear, for example, that Shepherd commits a fallacy when she claims that to deny her causal axiom leads to contradiction.[cdxxxix] As Hume, and later Kant, showed, the principle that ‘All effects have causes’ cannot be used to justify the inference that ‘All events have causes’.[cdxl] Shepherd, however, has in mind a kind of answer. Her answer is that there simply is no empirical distinction to be made between effects and events, since those ‘objects usually considered as effects’ always appear to us as ‘dependent qualities’ that begin to exist.[cdxli] What Shepherd wants to claim is that as a matter of psychological fact, a given effect or 'dependent quality’ of which we take notice just is an event with existence. For Shepherd then, an effect is a *felt event* that is *noticed by the mind* and then determined to the mind as a sense object.[cdxlii] Most importantly, since the *determination* of anything that begins to exist requires the inclusion of the idea of a cause, our representations of events are necessarily bound up with ideas of cause and effect. Given her view that there is no empirical distinction to be made between effects and events, it does follow that 'All events have causes’.

Another objection that might occur to the reader at this stage, as it did to one of Shepherd's early critics, is that Shepherd's response to Hume simply amounts to a scholastic appeal that causal necessity is perceived as a real property of external objects. John Fearn, for example, accuses Shepherd of having acquired scholastic leanings from her earliest instructor.[cdxliii] However, unlike the scholastics, Shepherd rejects the view that we can have direct knowledge

of the real essences of exterior objects. Moreover, she lays stress on her rejection of this point. For Shepherd, knowledge of 'natures' amounts to knowledge of the elements of ‘perceived, internal objects’, and such, knowledge is understood to involve subjective and objective elements that come together in the act of representation. Scholastic accounts of knowledge differ in that they are based on direct realism and place little emphasis on the empirical accounts of representation or philosophy of mind. AS such, they offer no means of explaining error in judgement or of distinguishing between merely subjective and objective elements in knowledge.

The principal reason that Shepherd's account is post-scholastic is that she explains causal representation within the context of the nascent philosophies of mind found in Reid, Stewart, and Brown. Having been educated in Scotland, Shepherd was undoubtedly influenced by developments in faculty psychology and philosophy of mind. Reid, for example, introduced numerous functions to classify the brain's activities, and was an important influence in the development of faculty psychology. Thomas Brown, who also makes philosophy of mind central to his philosophy, is applauded for having reduced the number of classifications of faculties in Reid, and for having emphasised the importance of attention, association, affect and functional analysis in the philosophy of mind. Like her Scottish counterparts, Shepherd supplements Hume's simple account of mental association with a more developed philosophy of mind, one that that lays emphasis on the roles of *attention* and *affect* in describing our perception and knowledge of inner objects.[cdxliv]

Shepherd is also interested in these functions and activities of the human mind, and she uses her introspective analysis of the mind's activities to describe the 'manner and action' of causation. In effect, she addresses the 'enormous oversight' that Herschel noticed in Brown, namely, the omission of 'a distinct and immediate personal consciousness of causation, in his enumeration of that sequence of events, by which the volition of the mind is made to terminate in the motion of material objects.'[cdxlv] In doing so, Shepherd appeals to a 'context of discovery' for causal necessity -- a context in which discovery of an *a priori* causal relation is made through introspective analysis. In this case, empirical reasoning and introspective analysis form the basis for the discovery of the activities of the mind in coming to discover causes and effects.

While the methodologies of Herschel and Shepherd share an emphasis on the distinction between the contexts of discovery and justification, it is even more interesting to notice the many affinities between the views of Mary Shepherd and William Whewell. Both thinkers, for instance, insist on *apriorism* in epistemology, an approach that was unusual in its day. Whewell, for example, adopts a line on representation that is similar to Shepherd's, when he says that ideas 'are the mental sources of necessary and universal scientific truths.'[cdxlvi] For Whewell, 'the part of a man's knowledge which belongs to his own mind, is *subjective*: that which flows in upon him from the world external to him, is *objective.* ... The combination of the two elements, the subjective or ideal, and the objective or observed, is necessary, in order to give us any insight into the laws of nature.'[cdxlvii] Like Whewell, Shepherd appeals to ideas contributed by the subject to argue that laws of nature do contain necessity. This argument leads her to reproach Hume on the grounds that he denied that ‘reason could prove, by the relation of our ideas, the knowledge of continued existences, and resolved all into "custom and imagination."'[cdxlviii]

As part of their *apriorism*, Shepherd and Whewell also share the view that ideas supplied by the mind relate disconnected bits of sense data in the process of concept formation.[cdxlix] On Whewell view, this 'binding together' involves ideas that are 'necessary conditions of knowledge' and reflects certain 'intellectual tendencies'.[cdl] Whewell writes that, 'Our sensations require ideas to bind them together' and that, 'If not so bound together, sensations do not give us any apprehension of things or objects.'[cdli] These ideas, Whewell claims, 'are *relations* of things, or of

sensations', so that sensation and ideas are always combined 'in a manner inseparable even in our conceptions'.[cdlii] Thus, 'it must always be possible to derive one of these elements from the other, if we are satisfied to accept, as proof of such derivation, that one always co-exists with and implies the other.'[cdliii]

Whewell also grants the plausibility of a view that Shepherd's argues for, the view that the ideas, as elements in perception, are a kind of sensation. Thus, ideas of the causal relation can correctly termed 'sensations of ideas' in contrast to 'sensations of qualities'. As Whewell explains,

> But granting this form of expression, still a *relation* is not a thing or a sensation; and therefore we must still have another and opposite element, along with our sensations. And yet, though we have thus these two elements in every act as absolutely and exclusively belonging to one of the elements. Perception involves sensation, along with ideas of time, space, and the like; or, if any one prefers the expression, involves sensation along with the apprehension of relations. Perception is sensation, along with such ideas as make sensation into an apprehension of things or objects.[cdliv]

Thus, Shepherd's contribution may have been forgotten for over a century, but there is a sense in which her doctrines survived through Whewell and Herschel. There was doubtless some degree of influence between friends and associates in all directions. For it is evident that thinkers such as Hershel, Whewell, Whately, and Shepherd were all deeply involved in a discussion and debate surrounding the relative importance of deductive and inductive methods in scientific reasoning and the nature of our knowledge of causality.

We have seen that Shepherd may initially appear to have offered a dogmatic denial of Hume's position, but that she actually proposes a substantive response to Hume that is based on her philosophy of mind and theory of representation. Shepherd's considered view is that the discovery of causal necessity rests on introspective analysis of the mind's operations. This is the first step in her argument in defence of the causal axiom. There is a further deductive step to be taken in connection with this discovery, a step that is required to justify the claim to knowledge of causal necessity. As Shepherd explains 'the relation of cause and effect is the chief proposition immediately associated with and applicable to certain exhibited sensations' and can be used to infer that similar effects have similar causes.'[cdlv] It is this inference that will complete the first part of Shepherd's answer to Hume. As Shepherd explains, the next step involves the justification of the universal axiom that 'LIKE CAUSES must necessarily have LIKE EFFECTS'.[cdlvi] 'In order to do this' she writes, 'let us bear in mind the reasoning already adduced in the foregoing Chapter, and it thence immediately follows that objects which we know by our senses do begin their existences, and by our reason know that they cannot begin it of themselves.'[cdlvii] Thus, having perceived through introspection that causal necessity is a feature embedded in representation, it remains to be shown that the attempt to *think* 'dependent qualities that begin to exist' as uncaused leads to contradiction.[cdlviii] The deduction, she argues, is based on the following *experimentum crucis*:[cdlix]

> Here is a new quality, which appears to my senses: But it could not arise of itself; nor could any surrounding objects, but one (or more) affect it; therefore that one, (or more) have occasioned it, for there is nothing else to make a difference; and a *difference* could not '*begin of itself*'.[cdlx]

Thus, 'reason forces the mind to perceive that similar causes must necessarily produce similar effects'. As Shepherd elaborates, what is meant by '*Cause producing Effect*' is 'a *new object*

exhibiting *new qualities*; or shortly, the formation of a new *mass of qualities*'. The formation of such new qualities involves bringing together original separate natures into a 'newly combined nature', so that 'each conjunction of bodies...produces upon their union those new natures, whose qualities must necessarily be *in* and *with them*, *in the very moment of their formation*.'[cdlxi] With this justification, Shepherd completes her proof of the causal axiom. While the first step of this proof is based on the discovery of the idea of necessary connection, the second step draws on this discovery in order to justify the causal axiom that like effects must necessarily have like causes.

It is important to note that at this stage, Shepherd has ventured nothing to support her view that specific propositions, such as natural laws, contain necessity. It is only in the second part of her argument against Hume that she attempts to defend this latter claim, a claim that she regards as requiring an entirely distinct proof. Shepherd argues that Hume wrongly conflates the discovery and justification of the causal axiom with the proof that specific propositions concerning causes and effects contain necessity. Hume, she says, conflates the two matters and 'makes a great mistake in supposing it necessary to demonstrate, in every particular instance, what *particular* Effect must necessarily flow from its object, in order to gain the idea of *necessary Connection*.'[cdlxii] With this in mind, Shepherd turns to her next task, which is to provide a separate argument to show that there is necessity in causal natural laws. This argument is made with a view to establishing her fifth proposition against Hume, that 'Nature cannot be supposed to alter her Course without a contradiction in terms' and 'that *Custom and Habit* alone are not our guides; but chiefly reason, for the regulation of our expectations in ordinary life'. Here again, she appeals to her two-step experimental reasoning in which our inductive reasoning culminates in a 'deductive test'.

Shepherd's view is that our particular expectations for the future are first formed inductively, and then justified by appeal to deductive test. It follows that expectation for the future is 'founded upon much stronger principles than those of custom and habit':

It is founded –

First, --Upon a quick, steady, accurate observation, whether the prevening causes are the SAME, from which an object is elicited in any PRESENT instance, as upon a FORMER one; --and,

2dly, --Upon a demonstration, that if the observation hath been correct, the result –(i.e., the whole effects or qualities,) must necessarily be the same as heretofore; otherwise contrary qualities, as already discussed, would arise without a cause, i.e., a difference begin of itself, which has been shown to be impossible.[cdlxiii]

Once again, we see that there is a role for inductive argument and a role for reason in Shepherd's experimentalism:

> Thus all experimental reasoning consists in an observation, and a demonstration, as has been shown; --an observation whether the circumstances from which an object is produced, and in which it is placed, are the same upon one occasion as upon another; --and a demonstration, that if it is so, all its exhibitions will be the same.[cdlxiv]

In the first instance, the mind takes notice of 'like qualities' and 'invariable sequences of effects' in compound sense objects, and the invariability of sequences leads us to conclude that there probably exists a causal connection.[cdlxv] Next, an *experimentum crucis* is performed in which the mind considers whether the difference in qualities could have begun of itself, and concludes

that ‘after the application of an exact experiment, it is impossible to imagine a difference of qualities to arise under the same circumstances’. [cdlxvi] In other words, her view is that the probable knowledge rests on experience of what does take place on a given trial. However, this knowledge is supplemented with a deductive argument to show that nothing else could ensue under exactly similar circumstances except if the causal principle were violated. It is this argument that justifies the claim that our expectations for the future are based on the idea of a productive principle according to which 'similar causes must necessarily produce similar effects’[cdlxvii]

It is apparent then, that the force of Shepherd’s answer to Hume rests on her claim that questions relating to *a posteriori* knowledge of causality lead directly to questions pertaining to *a priori* knowledge of the causal relation. In the latter sense, ideas of causality are contributed by the mind in the process of concept formation, and this forms the basis for the deductive test that leads to knowledge of the causal principle. On this point, Shepherd is perhaps best understood in light of her remark in the 1824 treatise ‘that the first of these questions is sunk in the latter’:

> It may be plainly seen, that the first of these questions is sunk in the latter, because, if objects usually considered as effects need not be considered as effects, then they are forced to begin their existences of themselves; for, conjoined or not to their causes, we know by our senses that they do begin to exist: we will, therefore, immediately hasten to the consideration of the second question, which may be stated in the following terms: Whether every object which begins to exist must owe its existence to a cause? [cdlxviii]

Hume’s view is that the 'philosophical' and 'natural' senses of cause are intimately linked, and that only experience could gives rise to the habit of mind leading us to think that every effect must have a cause. Thus, any query relating to the philosophical sense of cause can be ‘sunk’ into a query into the natural sense of cause. Against this view, Shepherd holds that that quite the opposite is true: the query regarding the philosophical sense of cause is the one into which other questions concerning causality are sunk. Specifically, the question ‘Whether every thing which begins to exist requires a cause for its existence?’ resolves itself into two other questions: the first is the question whether particular effects require causes; and the second is the more general question whether an object can begin its own existence. The latter queries are in the first instance answered by appeal to empirical and inductive considerations and in the second instance by appeal to a deductive test resting on causal necessity, an idea contributed *a priori* by the mind. So Shepherd inverts the direction of the reduction proposed by Hume, on the grounds that in order to consider particular ideas of causes and effects, we must first invoke the general principle of causality. Shepherd’s point then, is that the consideration of particular instances of causality *a posteriori* leads to the discovery of causal necessity by means of a further *a priori* demonstration. And, this is a claim that Hume denies. However, the question of whether an associationist or necessitarian view is correct remains a matter of controversy, so Shepherd is well within reason in staking her position. In the end, Shepherd’s answer might not satisfy every post-Humean critic of causality, but it does count as one kind of answer to Hume. Shepherd’s view of causation appears to involve an ‘epistemological ascent’ from probabilistic descriptions of regularities to talk about necessary connection as a feature built into representation. It is clear from Shepherd's argument that what she intends to do is to affix a deductive reductio-style argument onto results of inductive inquiry, all of which is supposed to work in virtue of her analysis of sense objects.

To sum up, there can be little doubt that the views on methodology expressed in Shepherd's 1824 treatise were, like the analyses of causality and induction proposed by her contemporaries, influenced by thinkers such as Bacon, Newton, and Kant. It also seems likely that there were

influences that ran between Shepherd and some of her younger associates in London and Cambridge -- individuals such as Herschel and Whewell. Herschel's distinction between the contexts of discovery and justification is particularly helpful in understanding how Shepherd moves beyond the dilemma proposed by Hume. For the in the context of discovery, we are led to sensations of ideas and sensations of qualities, the former, as ideas of necessary connection, supplying the basis for objectivit and necessity in our knowledge of the external world. Whewell's account that concepts are formed through the binding together of sensations and ideas sheds light on Shepherd's own view of representation, which is central to an understanding how she moves beyond the empiricist theory of ideas in her answer to Hume. In addition, Herschel, Shepherd and Whewell, in varying ways, all place emphasis on the idea of an *experimentum crucis* in scientific experimentalism, a notion that also figures centrally in Reid. It is this particular feature of their views that is most reminiscent of Bacon. Indeed, Shepherd's remarks on Bacon suggest that she thinks of herself as working in a post-Baconian tradition. She applauds Bacon's methodology, arguing that Bacon's views were perfectly consistent with both theism and recent scientific experimentalism:

> Lord Bacon was a severe theist, and he never imagined for a moment, but that a God had designed and arranged to given ends the whole of what we see around us. Lord bacon, for instance, would have thought it vulgar, were the physical *causes of* HEAT inquired into, to have it answered, that it arose from the spark *intentionally* communicated to a heap of wood. Nevertheless he could not deny in such a case, that the intention to create a partial fire, and the means used toward it, were the one its final cause, the other, its efficient causes.[cdlxix]

Shepherd's above remark reminds us of the controversy over Leslie's 1804 footnote, and suggests a critical stance toward the scholastic analysis. Her view of the relationship between final and efficient causes is that final causes are 'nothing more than a name for a compound set of PHYSICAL EFFICIENT CAUSES'. However, unlike efficient causes, final causes are not detectable by sense organs. Still, final causes are experienced as 'essences' and 'primeval natures', she argues, and can only be indirectly known by reason and analogy to the visible things perceived around us.[cdlxx] For now, what is important to note is that Shepherd does not make a scholastic appeal as a basis for knowledge of efficient causality. Nor does she uncritically adopt the distinction between efficient and metaphysical causes as it is understood by Stewart. What her account emphasises is that knowledge of the necessity underlying efficient causes is possible through scientific experimentalism. Ultimately, this knowledge of proceeds on the basis of first, an *a posteriori,* inductive argument, and secondly, by epistemological ascent, to reason and the *a priori*.

It is impossible at this juncture to speculate with any confidence on the extent of the communication of ideas between Mary Shepherd and others involved in modifications to Baconian induction. It would be difficult to establish the priority of ideas in this circle, and there were quite likely many ideas on induction, causality, and scientific reasoning 'in the air'. Moreover, views on intellectual property, for example, were somewhat vague, and certainly less restrictive than our own. Whewell, for example, held that once an idea becomes comprehensible to a wide enough circle of individuals, it then becomes the intellectual property of all those who fully and intelligently grasp the problem.[cdlxxi] In any case, I have made no an attempt to establish intellectual priority, and simply drawn links between views as they seem philosophically appropriate and helpful. It is interesting to note, however, that one of those to whom Shepherd is described as having poured out her metaphysical speculations is William Whewell. Understanding this, and looking forward to the theories of Herschell and Whewell, it is easier to understand how and why Shepherd developed her arguments against Hume on causality.

Whatever the precise connections between ideas and the directions of influence, it is safe to say that Shepherd shared in the efforts of some of the most important contributors to methodological analysis of her day. Like Herschel and Whewell, Shepherd clearly saw herself as building on a Baconian tradition in her analysis of experimentalism and causality. She evidently fell on the same side on the issue of *apriorism* as Whewell; and departed on this score from Herschel and John Stuart Mill. And, like many of those who would follow her in developing thoughts on induction, she most certainly saw the limitations of Whately's logic. For, one thing that seems certain is that Shepherd was involved in an effort to describe how the combination of deduction and induction in experimentalism could lead to a critically defensible response to the scepticism engendered by Hume. Indeed, in looking back to Bacon, we see that there is a need for an updated discussion of scientific methodology, a need that becomes ever more pressing after Hume's critique. And, in light of the sort of wild charges made by figures like Kerr, we can understand why Shepherd and her counterparts may have considered it important to address the issues around methodology, causation and metaphysics in the way that they did. So, whatever the precise influences and motivations, Shepherd's 1824 treatise initiated a new and promising strategy in answering Hume. Although it would be some time before the basic ideas would come find clear and full articulation, the rudiments of the strategy are already evident in Shepherd. One way or another, Shepherd's answer to Hume belongs in the same tradition as that of her scientific and intellectual circle in London.

Mary Shepherd□s Salon: Science and Society

4.1 Shepherd's Circle of Literati, Scientists and Publishers

Mary Shepherd ran a salon. Her salon brought together old and new friends in London's Westminster district, friends that included some of London's best and brightest in terms of intellect and ingenuity. Although too little is known of Shepherd's salon, Shepherd herself was remembered as a hostess of unusually sharp wit and logical ability:

> I should like to hear more about the gifted Lady Mary Shepherd -- and her 'Salon,' which my mother has often assured me was a very interesting and agreeable one. My father seems to have been often there, and Lady Mary's humour seems to have been as well known as her logical powers, and occasional causticity.[cdlxxii]

The list of friends and guests entertained at the dinner and after-dinner soirées in the Shepherds' home is a partial one, and yet, it is of great assistance in the reconstruction of this aspect of Mary Shepherd's life.

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[ch3: The Shepherd family was very well placed socially. Sir Samuel was King's Advocate between 1813 and 1819 and later Lord Chief Baron of the Court of the Exchequer of Scotland from 1819 to 1830. All told, the family circle attracted many eminent individuals, and the home of Lady Mary and Henry John Shepherd became a sort of intellectual and literary hub.] Their circle of social, scientific and literary friends, included, among others: Jeffrey Lockhart and family, the Reverend Sydney Smith, Thomas Malthus, David Ricardo, Henry Hart Milman, Henry Hallam, the Leonard Horners, Charles Lyell, Charles Babbage, Mary Somerville, William Whewell, John Murray, Lord Lyndhurst and family, and Lord Dudley.[cdlxxiii] Other guests were college friends of Henry John Shepherd, such as William Maule, Lord John Campbell, Thomas Talfourd, the Hobhouses, and Mr. Abraham Hayward. Among the ladies were Lady Charleville, Lady Stepney, and Miss Runnington.[cdlxxiv]] Thus, Lady Mary not only pursued her scholarly interests throughout her married life, she ran a salon of sorts, to which there were many regular subscribers. According to her daughter, there were frequent dinner parties, and after dinner, these parties were opened up to a wider circle of friends who would gather to discuss the latest developments in a variety of fields. 'Sometimes there would be a dinner of 8 or 10 with general conversation, sometimes of 12 or 14 breaking into groups. Dinners then were early enough to have an after evening; and at half past 9 or so, there would assemble really at tea, 20 or 30 more in the drawing-room, and the society would melt away at 11.'[cdlxxv] There were other guests as well, but some have been forgotten, and others left unnamed.[cdlxxvi]

Although it is hard to gauge personal convictions by the wider circle of acquaintance, Lady Mary Shepherd's inner circle supplies clues to her deeper affinities and beliefs. With this in mind, several friends deserve notice as the close confidants of Lady Mary Shepherd. 'The persons who, besides my father, most thoroughly entered into my mother's mind, and followed where she led into great and wide depths of abstract enquiry, were Mr. David Ricardo the political economist, Mr. Pearson, Dr. Whately Archbishop of Dublin, Dr. Whewell, afterwards master of Trinity, and Mr. Cameron.'[cdlxxvii] For now, the important point to note is that Mary Shepherd continued to engage many of the brightest and most exciting minds of her time after her marriage. In fact, it was through her marriage that Mary Shepherd succeeded in cultivating her intellectual gifts into mature adulthood, a circumstance that was both extremely fortunate and unusual in her day. That the people and events in her life provide clues to understanding Lady Mary Shepherd's philosophical work will become increasingly apparent as her story unfolds. In

the meantime, we must turn to developments in the philosophical, social, and religious context in which Mary Shepherd's thought evolved. As with her social connections, the social and religious context of the times has no direct bearing on the cogency of Mary Shepherd's arguments. However, just as the social connections provide clues regarding intellectual influence, so the contextual clues help to underscore the significance of and motivations behind Shepherd's philosophical contribution.

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It suggests friendships acquired in youth and extending throughout life -- friendships that extended from early days in Holland House and Barnbougle to an intellectual circle of scientists, publishers, and 'men of letters' with links to the four major universities in Britain; Edinburgh, Cambridge, Oxford, and London.

It is very likely that the Primrose children were socially acquainted with a number of the young gentlemen -- aspiring scholars, clergy, doctors, lawyers, scientists, and politicians -- who came to Edinburgh to study under well known teachers such as Dugald Stewart. The Primrose family had rented Holland House during the minority of the third Lord Holland, and Charles Fox and his son and nephew would have been acquaintances. So Lord Holland and his circle, individuals such as Allen and Brougham, for instance, would have been friends of the family. Of course, Mary and her siblings had been educated at home by private tutors and encouraged to develop a 'culture of letters', and so would have been comfortable with advanced philosophical conversation. It is easy to imagine them participating in the lively social and intellectual scene in Edinburgh. The Primrose family, as part of the 'upper crust' of Edinburgh society, would also have known Edinburgh figures such as Thomas Brown, Henry Cockburn, Francis Jeffrey, Henry Brougham, and Macvey Napier. These and many more would all have been social acquaintances. Precise connections are never easy to discern, but there can be little doubt that, as an aristocratic family with five lively and well-educated children, that in all likelihood, the Primroses were socially active with a substantial subset of Edinburgh's men of letters. And, if adulthood friends are any indication, Mary Shepherd was neither a snob nor a bigot; her intimate circle included self-made scholars, tutors, the less fortunate, the controversial, and the eccentric.

Not surprisingly, Shepherd knew many of the public figures involved in the Leslie affair. She was personally acquainted with John Leslie, and many other scientists and mathematicians, including Charles Babbage, William Whewell, Mary Somerville, and others. According to one description, in the 1840s, Charles Babbage, who is described as an 'intimate friend' of the family, shared virtually the same dinner society as the Shepherds'. Henry Hart Milman, Lady Catherine Stepney, Mary Somerville, Sydney Smith are all listed as part of Babbage's social circle; the list closely resembles one describing the dinner guests of the Shepherds.[cdlxxviii] In a letter to Charles Babbage, Mary Shepherd mentions a discussion with Leslie about the Humbolt -Biot dispute over the location of the magnetic poles.[cdlxxix] Babbage and Leslie would themselves have been acquainted at least from 1819 onward, since Babbage's name was put forward as a candidate to replace Leslie in the Mathematical Chair at Edinburgh --the very same position that was filled by John Wilson. As for Edinburgh's professors, Mary Shepherd, though she does not mention any personal connection, was evidently familiar with the philosophical work of both Stewart and Brown. Babbage, on the other hand, actually mentions visiting Dugald Stewart in Scotland. Though it is never easy to estimate the depth of the personal regard between historical figures, it is worth noting that Babbage named one of his sons 'Dugald'![cdlxxx] It seems likely that Mary Shepherd would also have been at least socially acquainted with Stewart and Brown. She is critical of some of their philosophical views, but took the unusual step of rising to Stewart's defense in print.

Following her marriage, Mary Shepherd's social world was largely drawn from society in

London's Westminster area. The Shepherds' London friends had wide-ranging interests and views, although there are clearly some shared interests and concerns among the members of her Westminster circle. Many in her social circle, for example, shared a love of mathematics, science, and abstract analysis -- subjects that played an important role in the emerging and developing sciences of the nineteenth century. A cursory look at the list of college friends of Henry John Shepherd suggests that Trinity College's Analytical Society played a role in uniting the members of the Shepherd's London salon. Charles Babbage, Frederick Maule and Edward Ryan, for example, were among the family friends involved with the Analytical Society.[cdlxxxi] Another university connection may have been the Cambridge Philosophical Society, which included at least several of the Shepherds' dinner guests, including Reverend William Pearson. Pearson, along with the likes of Babbage, Herschel, and others, was a founding member of the Astronomical Society, which was an outgrowth of the Cambridge Philosophical Society.

A second interest of the members of Shepherd's group was political and economic reform. For a majority of guests belonged to 'Benthamite' and 'radical' circles. James Mill, a close friend and follower of Jeremy Bentham, was, at least for a time, one of those who formed part of Mary Shepherd's circle of intimates. David Ricardo, however, is given special mention as a close confidante of Mary Shepherd. Interestingly, Bentham himself claimed to be the spiritual father of James Mill, and said of Mill that he was the spiritual father of David Ricardo -- this making Bentham the spiritual grandfather of Ricardo.[cdlxxxii] As political economists, their views often differed, but they overcame differences that arose and valued their debates. In fact, for the most part, they self-consciously modeled good conduct in public debate, which gives insight into the value placed upon human dignity and respect within this intellectual set.[cdlxxxiii] There may well be philosophical reasons, in addition to social ones, for this attitude. Consider, for example, that they agreed, for the most part, that the interests of the collective were reducible to the common interests of individuals. This ideal, which heralds back to enlightenment thinkers like Jean-Jacques Rousseau and Adam Smith, was also promoted by Dugald Stewart, and is now seen as a hallmark of the liberal tradition. The influence of their views, and especially of Ricardo's views on political economy, eventually grew considerable. Most importantly, however, these Benthamites, radicals, and reformers agreed to certain enlightenment assumptions about the state and society, and shared in common a desire to establish political and economic reforms.

The politics of reform was no doubt a central topic of conversation in Mary Shepherd's salon and among her circle more generally. Despite their philosophical differences, it is clear that this set shared a desire to get at the fundamental principles governing the economy and an interest in reform. But for Mary Shepherd, the most important intellectual companion in the set was David Ricardo. Ricardo's abstract economics and his moderatism earned him criticism from some of the more radical members among the Westminster radical circle, and this is particularly true after the radicals became increasingly divided on issues related to reform. However, in 1818, it is clear that the Shepherd's group is quite cohesive. On one occasion, Ricardo writes to Malthus from Gatcomb Park in Minchinhampton to say that James Mill had arrived the day before and that Malthus's company is strongly desired by the party at Ricardo's estate. The letter, dated 20 August 1818, is franked by Mary Shepherd's husband, Henry John Shepherd, M.P. for Dorsetshire, Shatftesbury from 1818-1820.[cdlxxxiv] This letter is significant for our story because it puts James Mill, David Ricardo, and the Shepherds together in 1818 in no uncertain terms. It is important to note the date, however. For the Carlile affair of 1819 may well have divided the group -- at least for a time. However, there is every reason to think that the Shepherds were connected to Mill and Ricardo at the very time that they took an interest in Kant studies (despite its apparently treasonable consequences). The letter also makes it apparent that the Shepherd's were still connected to political and philosophical radicals shortly after the famous 1818 election.[cdlxxxv] Kant studies aside, the main topics in 1818 were undoubtedly Parliamentary reform and political economy, topics which would have been of considerable interest to Henry John Shepherd, who published the first edition of his *A Summary of the Law relative to the*

Election of Members of Parliament in 1825.[cdlxxxvi]

Thus, some of Mary Shepherd's friends were evidently ones acquired in her youth; others were friends acquired through marriage, and still others were friends acquired through London society. A hallmark of the individuals in Shepherds' set was the ability to cross party lines in the name of friendship, civility, and reform. Another noticeable feature is that many in her social set were considered eccentric. In addition to Babbage, there was Richard Whately, an eccentric clerical figure and minor celebrity after his outrageous *Historic Doubts*. Equally notorious and unique was Sydney Smith, who became well known for his acerbic wit and entertaining antics, and was a favorite at Holland House for some time. Another socially controversial acquaintance, at least for his drug addiction, was Samuel Taylor Coleridge. Coleridge's deep fascination for German philosophy and literature did much to re-awaken the British interest in German ideas, and especially in Kant.[cdlxxxvii]

Among the many family friends were individuals notorious for having expressing liberal, reformist, or radical sympathies in the early days of the French Revolution, and then later adopting more conservative views. This is arguably true of Thomas Erskine, James Mackintosh, Sydney Smith, John Murray, Samuel Taylor Coleridge, William Wordsworth and others in Shepherd's social circle. Though initially sympathetic to the cause of the people, they later openly denounced revolutionary and republican ideals. In staying the course of the reform movement, the Shepherds appear to have emphasized diplomacy and moderation. They were equally comfortable with more conservative reformers such as Lord Lyndhurst (Sir Samuel Shepherd's brother-in-law) and radical reformers such as John Cam Hobhouse.[cdlxxxviii] Although genteel standards are more often the norm in academia and other professions today, they were a far cry from the persecutory and vicious personal attacks still frequently invoked to silence the views of ideological opponents in Shepherd's day. This intangible good, as much as any intellectual contributions or political reforms, is a legacy of Shepherd's social set.

The importance attached to 'refinement of tone' in Shepherd circle cannot be overemphasized; it seems to have been one of the uniting creeds of the group. The members of the coterie sometimes held different philosophical and political views, but they usually did so without animosity. That said, it is possible that relations became strained among some members of the group after 1819. James Mill and his son John Stuart Mill, for example, had strongly objected to the trial and imprisonment of Carlile -- events that began to unfold in 1819 and that had involved the Shepherd's directly. The Mills, and several others in the radical set, were uncompromising and unforgiving in their attitude toward those involved in the Carlile affair -- including Sir Samuel Shepherd -- even though Sir Samuel's fate would have been one with Carlile's had he publicly refused to co-operate with the Prince Regent. Most in the circle however, seem resigned to a more moderate approach to reform after the sobering events of 1819. David Ricardo and others were accused by angry hard -liners of associating with 'Change Alley devotees' and 'borough-mongers', and with supporting policies that would encourage political quietism. Hobhouse was similarly criticized as his rhetoric varied from Radical to Whig to suit the day. Hobhouse eventually came to be regarded as a hypocrite in the eyes of the public, although his ability to read the times and to adjust his rhetoric made him one of the most important and effective politicians involved in parliamentary reform. In any case, because of the social change and unrest in the period, it is difficult to pigeonhole the politics of public figures of the day -- and this is also true of Mary Shepherd and her circle. After 1819, it became increasingly difficult to openly press liberal or radical views against the conservative policies of Prince Regent, whose own 'about-face' in politics had placed many of his liberal-minded courtiers in a nearly impossible situation. And, as social unrest increased, the conservatives had the distinct advantage of appearing to have been right in their claims about the dangers of liberal policies and practices.[cdlxxxix]

In the end, it was the moderate course that would lend credibility to proposed social and political reforms, and the moderate reformers would in fact do much to bring about the needed reforms. These reforms succeeded, by and large, as a result of the varied and co-operative efforts of those who united -- despite personal and political differences -- to bring about change. In uniting, they were able to introduce reforms as profound as those earlier accomplished by Locke and his circle of Whig politicians. As in the case of Locke and the Glorious Revolution, victory had depended upon adopting a moderate rhetoric and plan for reform. Thus, seen in the light of a strategic effort, the changing rhetoric of the 'turncoats' was not part of an effort to introduce political quietism, but an effort to sustain the spirit of reform amidst the growing sense of conservatism. As philosophical and reforming radicals, they continued to seek out the 'true causes' of failing social and economic conditions around them; but most of all, they were devoted to finding and implementing successful measures and strategies for reform. It was an approach to reform that made party politics the secondary agenda, and with leadership drawn from parties on all sides, they succeeded in cutting across party lines in the name of moderation. Arguably, it was through the moderate strategies, determination, and collaborative efforts of this talented group that the much-needed reforms were in fact achieved. John Stuart Mill, once a virulent critic of these publishers, scientists, lawyers, and politicians, regretted the rashness of his youthful attacks in his autobiographical remarks. Moreover, in his mature writings on utilitarianism, the younger Mill adopts 'the harm principle', a principle that specifies the sense in which individual freedoms can legitimately be limited.

It is well to remember then, that Mary Shepherd's social circle was quite diverse. She was an aristocrat by birth, but close friends with many of humbler origins, including Ricardo. Among her close friends was Charles Babbage, who, though of good family, was considered 'poor' and eccentric by many.[cdxc] Thus Shepherd was comfortable in the best of social circles, but by no means close-minded or narrow in her views or in her society. Because of her Whig family traditions, and her connections to radicals and 'turncoats', it is not an easy matter to decide on her politics. What we do know is that she was frequently engaged in abstract debate, that she enjoyed wit, and that she sought a social and intellectual milieu that would ensure stimulating conversation and controversy.

4.2 Kant and the Philosophical Radicals

Among the group of radicals known to have been associated with the Shepherds are included James Mill, Henry Hallam, David Ricardo, William Maule, and John Cam Hobhouse.[cdxci] This list suggests that the Shepherds were connected to both 'Westminster' and 'philosophical' radicals. In the former group are included mainly politicians, such as John Cam Hobhouse. The latter group, broadly construed to include James Mill and David Ricardo, included political economists and self-proclaimed 'philosophical radicals' -- individuals committed to identifying and theorizing about the root causes of social problems -- causes such as unrepresentative government, inflation, excessive taxation, and so on.[cdxcii] The philosophical radicals were not merely interested in bringing about reforms; they placed great emphasis on the activity of understanding the underlying issues. Both the Mills and David Ricardo can be counted among the 'philosophical radicals', since all sought to formulate causal explanations and theoretical justifications of conceptual issues underlying reform. Mary Shepherd, who was highly abstract in her approach to most questions, is more easily identified with the 'philosophical radicals' in her social set than with the 'Westminster' radicals. Her husband, Henry John Shepherd, on the other hand, would likely have shared interests in common with the 'Westminster radicals, who were more actively involved in bringing about parliamentary and political reforms.

The philosophical radicals shared common ideals and objectives. For instance, they appealed to the enlightenment ideal of individual liberty. In addition, they sought to identify causal laws governing economic activity, and develop the theoretical underpinning for reform.[cdxciii] James

Mill, arguably the first in the line of so-called 'philosophical radicals', looked explicitly to Thomas Brown for ideas for developing his own theories. It is likely that both Brown and Mill would have known Willich, the former student of Kant's who had gone to Edinburgh to study. Willich had offered German and Kant instruction while in Edinburgh, and his publications summarizing Kant's critical system were the first to include a description of Kant's foundation for science. Kant's view of science was influential on Brown, whose desire to make mental philosophy 'scientific' in a Kantian sense is evident in his *Observations on the Zoonomia of E. Darwin*, published about 1796. Perhaps inspired by Kant's attempts to provide a metaphysical foundation for Newtonian science, Brown went so far as to attempt a Kantian foundation for medical science [get and describe]. Villers' wrote a condescending footnote on Brown's efforts to develop a Kantian philosophy of medicine, and the reference may well have spurred Brown to write his 1803 review of Villers' *Philosophie de Kant*.[cdxciv]

Despite the efforts of Nitsch, Willich and Villers, it is arguable that none of Britain's philosophers had fully understood the complexity of the critical system of philosophy by the turn of the nineteenth century. At this point, the concept of systematic philosophy is primarily understood in terms of schemes of classification -- not in Kant's deeper sense of systematic unity under causal laws with objective, *a priori* content. Brown may have been the first among the British to begin to grapple with and develop the Kantian idea of the subsumptive character of science. The idea was all but forgotten, however, until the second wave of interest in Kant, and by that time, Brown was nearly dead.[cdxcv] The first wave of Kant studies had subsided due to a sort of suspicion that Kant's philosophy, although 'abstract, remote from experience and intellectualistic', might actually harbour socially and politically dangerous elements. As Giuseppe Micheli explains in his article 'The Early Reception of Kant's Thought in England: 1785-1805', the political unrest in early nineteenth century Continental Europe was a matter of close scrutiny in England, and liberal philosophies became a focus for the anxieties of political conservatives.[cdxcvi] Condemned for its effects on Germany's youth and universities, Kant's philosophy became a target for England's increasingly conservative literary journals. As Micheli explains, 'To conservatives it was an irreligious and politically dangerous system. Liberals and radicals, all firmly following in the wake of the tradition of Locke...were repelled by a form of language and a type of problem which they considered abstract, remote from experience and intellectualistic.'[cdxcvii]

Thus, Kant fell out of favour, for reasons not unlike those cited against Hume and Leslie by the ministers of Edinburgh. Brown himself died before the second wave of interest in Kant had taken root, although he had, in the meantime, drawn attention to the analysis of the human mind. In this area, Continental thinkers, including Condillac and Kant, had influenced Brown. The character of knowledge is, for Brown, as for the enlightenment philosophes, systematic. As Robinson explains, 'We find also in the genius of the Enlightenment the ubiquitous notion of system, the idea that in every domain of inquiry there is within reach an overarching set of principles or laws with which to connect the otherwise isolated links on the great chain of thought. Whether the *philosophe's* talent was addressed to politics or ethics, logic or philosophy, art or history, he was convinced that a successful effort on his part would yield a *system*.'[cdxcviii] Condillac, whom Robinson takes to be an important influence on Brown, holds that finding the true system of mind is important for foundational reasons. And, Condillac, according to Villers, was a proto-Kantian. For he claimed that the development of a single foundational concept in the philosophy of mind should be the basis for the system of knowledge, and this, in Villers' view, is in the spirit of Kant's transcendentalism.

It is important to take into consideration the influence of Condillac and Kant in interpreting role of systematicity and unity in Brown's philosophy. Brown's presupposition was that all domains of knowledge, including theology, are unified by an underlying account of the mind -- and particularly to an account of sensation, cognition, and language. Although often criticised, Brown had his supporters too. As James Mackintosh pointed out, the simplicity in Brown's philosophy

of mind did away with the onerous metaphysical assumptions that Reid had taken for granted.[cdxcix] This result was in consequence of Brown's methodological bias in favour of a unified system of knowledge. As Brown explains, knowledge of the mind holds the key to further research in areas as diverse as ethics, politics, and theology. Brown writes, 'Such are the various lights in which the human mind may be regarded, -- *physiologically, ethically, politically, theologically*. It is thus the object of many sciences, -- but of sciences that, even when they seem most remote, have still one tie of intimate connection, in the common relation which they all directly bear to the series of feelings of the inquirer himself.'[d] What Brown has in view that mental and physical feelings given in sensation can be scientifically and systematically described. Brown also points out quite explicitly that all physical inquiry depends on an understanding of cause and effect.[di]

James Mill deployed Brown's terminology in his own philosophy, and Brown may well have mediated the link between Kant and Mill. In any case, we know that as the scandal surrounding Kant's philosophy began to subside in Britain, a second wave of interest in his philosophy emerged, and that this wave is associated with figures such as Mill and Ricardo.[dii] In his diary for March 1819, George Grote remarks that he had been studying Kant prior to daily discussions with Mill and Ricardo. Grote records his activities on Sunday, March 28th: 'Studied Kant until 1/2 past 8, when I set off to breakfast with Mr. Ricardo. Met Mill there, and enjoyed some of the most interesting and instructive discourse with them...'.[diii] Thus, there is evidence of a renewed interest in Kant. It was this second wave of interest that eventually led to a much clearer understanding of Kant's philosophy in Britain, and ultimately, to the publication of English language editions of the *Critique of Pure Reason*. Given the influence of Brown, the return to Kant studies would have meant that the notions of the *a priori,* of systematic unity, and of subsumption under laws would have been examined as epistemic criteria of truth.

Kant is by no stretch of the imagination the sole influence on the philosophical radicals, although his response to Hume plays an important role in Britain's nineteenth century developments in philosophy of science. Ideas on the foundational role of causality were, naturally, a subject of great interest, particularly given the implications of Hume's critique. Where Hume raised doubts about the potential of science, Kant subdued worries. Kant was an antidote to Hume's scepticism -- a fact that Willich had advertised so many years earlier, but that for various reasons was slow to be received. There was still a strong desire to model philosophy after Netwonian mathematical physics, and quantificational analysis had long been an ideal for political economy. As early as the seventeenth century, the political economist William Petty had used the quantitative methods of counting and measuring to describe and analyze the characteristics of prosperity in a society. Data collected on population, land, resources and the like were used to determine unknown values. As Adam Smith reasoned in his *Wealth of Nations*, if it took one day to kill a beaver and one day to kill two deer, then, using labor as the measure of the value of the product, the value of one beaver is equivalent to the value of two deer. And, just as the labor theory provided a means of adding the value of production, so did distribution theory explain the division of wealth in terms of the value of a product.[div]

Smith's ideas had a tremendous impact on the theories of Bentham, Malthus, Mill, and Ricardo. Bentham drew on the utilitarian idea of quantifying value implicit in Smith to interpret moral decision making itself in terms of the calculation of 'utilities' or values. The idea behind Bentham's utilitarian doctrine is to extend quantitative analysis to applications in the social and moral context. The general moral directive is to maximize the happiness or pleasure of the greatest number. The presumption is that a mathematical calculation of utility or value would be an effective approach to establishing the sum of happiness that an action or rule might produce.[dv] Malthus built on the existing framework in Smith and Bentham with his theory of population. Malthus' theory included the speculation that food increased at an arithmetic rate while population increased at a geometric rate. His theory was both abstract and quantitative --

not to mention seemingly invulnerable to empirical refutation. Thus, Malthus appeared to have found a quantitative law regarding population growth. In sum, both natural philosophers and early political economists such as Smith, were important influences on the later Benthamites and Utilitarians.

By the 1820s, the political economists and philosophical radicals in Shepherd's circle were particularly keen on formulating causal laws and on identifying a consistent and coherent set of mathematical economic principles that could be subsumed under such causal laws. Whereas early economic theories had been 'partial, concrete and *causally* empirical'; as time went on, the methods of economic analysis became increasingly 'general, abstract and deductive'.[dvi] James Mill's political economy falls neatly into the latter category. Indeed, James Mill, who wrote on a wide variety of topics, is often noted for his commitment to a deductive system of philosophy. As an alternative approach to Paine's *natural rights* justification for reform, Mill, following Bentham, aimed to base social reform on a theory combining appeals to *laws of thought* and *individual* rights founded in law. Indeed, James Mill firmly believed that the lasting solutions to social problems in Britain would be discovered and justified on a rational basis, solutions described in economic theories crowned by causal laws. Mill in fact argues for a form of democracy in his *Essays on Government*, but his failure to advance an 'data-drive' model led to the severe criticism of his work in Thomas Macaulay's *Edinburgh Review* article. Macaulay, it will be recalled, claimed that a science of politics could only advance by observation and induction from the data. He was entirely unsympathetic to Mill's appeal to the principle of a fixed human nature --that humans are, as Bentham had claimed, essentially self-interested --from which principles of good government could be deduced.

Mill's model presumes that the principles of human nature are *a priori* and fixed, and that specific knowledge with a bearing on the workings of political institutions, would follow from knowledge of the fundamental principles of human nature. Mill's style of political 'science' may initially seem implausibly abstract in hindsight, but whether Mill's view would have sounded absurd in his day is a matter of some doubt. Consider, for example, that these were the heady days of *phrenology* -- the theory that fixed laws governed character traits -- traits supposed to be determined by the size of the brain as judged by observation and measurement of the skull. Though already discounted by many of the leading scientists of the day as fraudulent, many were credulous.[dvii] The famous phrenologist, Franz Joseph Gall, probably sounded compelling to many, appealing to his 'scientific' authority to declare, 'Who, now, will dare to maintain, that there is not in man an innate propensity, which leads him to the destruction of his own species? Where is the creature, that evinces more ferocity towards all other animals, not excepting his fellows, than man?'[dviii] Of those who were not believers in phrenology, many were still prepared to believe that human nature was fixed. Both Brown and Mill could be counted among the latter group.

To those committed to the science of the fixed principles of human nature --whether via phrenology or philosophical introspection -- there was further commitment to the belief that putative discoveries of correlation were indicative of causal relations. Not surprisingly, causal assumptions, if not always explicit, are implicit in Mill's theory; human nature causes certain behavior, and knowledge of the causal relationships underlying human behavior can be used to achieve certain social and political results. In addition to its causal implications, Mill's system, was a quintessentially axiomatic deductive system. Unfortunately, in the context of the increasing confidence in observational and inductive methods, Mill's theory received little credit. After his father's death, John Stuart Mill modified his father's system of political economy, adding the qualifications that experience could alter fundamental character, so that the empirical 'laws' of political economy would be tentative and subject to revision. Thus, James Mill's son would eventually redressed the imbalance to include both abstract considerations proceeding from 'top' and inductive analysis proceeding from the 'bottom' upwards.

Like James Mill, David Ricardo was also criticized for his abstract approach in the field of political economy. Ricardo contributed to the trend toward abstraction, and is credited as the founder of 'pure economic theory', which develops consistent theories by deriving consequences from a small set of assumptions. It was thought that if the assumptions are true, and the theories logically consistent, then the theories would also be true and applicable.[dix] This is precisely the virtue attributed to subsumption in scientific theory. In addition to his methodological interest in subsumption, the spirit of quantitative analysis is also evident in the political economy of Ricardo. Ricardo expresses his central ideas relating to the distribution of wealth in terms of a quantifiable interpretation of the concept of value; that is, value as understood in terms of quantity and cost of labour. One area where the abstract, deductive and mathematical approach in Ricardo is particularly apparent is in his ideas on international free trade, initially developed from James Mill's theory of 'comparative advantage':

> By assuming differences in technology and nothing else he reached the conclusion that free trade would promote the welfare of all societies. The scenario is a textbook favourite: two countries, two products, constant returns, etc. However, the assumptions which are not normally mentioned are: no history, no institutions, no technological rigidities, no transfer of resources, no unemployment, no exercise of unequal political power, free trade between and perfect competition (i.e., 'the natural state') within each country![dx]

Even in the nineteenth century, Ricardo was frequently criticized for his theoretical approach to free trade. This criticism seems equally applicable in the case of Ricardo's account of the nature of value and production in the economy. Ricardo's writings emphasized Say's Law of Markets, claiming that the money supply in the system must only be adjusted according to the production of goods, since, as Ricardo puts it, 'Money cannot call forth goods, but goods can call forth money...'.[dxi] In his attempts to determine the conditions of 'equilibrium' in the system, Ricardo is famous for having severely criticized inflationary monetary policies based on the introduction of excess paper currency in the form of credit. According to Ricardo, the only justification for introducing new money into the system is production in the economy. But Ricardo's economic theory focussed mainly on analysis of the commodities market, and on his labor cost theory of value. Hence Ricardo was criticized for his failure to integrate the commodities and money markets in his analysis. Others claimed that bottom-up considerations are in fact implicit in Ricardo's account of the nature of value and production in the economy. This integration is not readily apparent in Ricardo's *Principles*, but his knowledge of money markets was extensive, as is evident in his many pamphlets on the subject.[dxii] Perhaps Ricardo did draw on his experience and understanding of money markets, and perhaps real life considerations did play a role as he formulated his theories. There is even some loose sense in which Ricardo may have had a standard of theory-data fit. But the question of whether data actually serve as a basis for modification to Ricardo's theoretical models remains an open one. One thing that seems indisputable, however, is that there was a strong emphasis on deductive elements in Ricardo's system -- and emphasis on abstraction, causality and systematic unity.

While Kant may have encouraged an interest in subsumption and causal laws, there were a variety of influences pushing economics toward the science model. Over time, the British government would grow increasingly aware of the political power of this quantitative data and analysis, and take over the task of collecting and managing the data themselves. Thus, the quantitative analysis of society grew increasingly important. The hope was that social phenomena might be studied with the same precision as natural phenomena, and lead to exact knowledge that might be fruitful both for government and for the other developing sciences.[dxiii] By the turn of the nineteenth century, it was expected that the resulting 'science' would serve to justify suggested or needed reforms. Mary Shepherd, who spoke intimately on intellectual matters with David Ricardo, was strictly interested in epistemology and metaphysics -- and

wrote nothing on economic theory. However, Ricardo, Mill, and Shepherd all placed emphasis on abstract analysis, on the discovery of causal laws, and on an axiomatic, unified system to supplement the criteria of truth for empiricism. In this sense, they were in basic agreement about some of the fundamental characteristics of knowledge.

Shepherd's connection to the Westminster radicals, while suggestive of personal and political convictions, also shed light on the systematic approach implicit in her work. Shepherd's two major philosophical works, published in 1824 and 1827, and entitled *An Essay upon the Relation of Cause and Effect* and *Essays on the Perception of an External Universe* are united by an underlying account of causality.[dxiv] In addition, Shepherd two shorter pieces, published in 1828 and 1832, are also intended to elucidate her system.[dxv] Shepherd commitment to unifying a wide range of subjects under the causal axiom marks her philosophy as belonging to the same Kantian vintage as that of the political economists and philosophical radicals in her circle. Like Kant, Shepherd intends the whole to hang on a system that is ultimately subsumed under laws with *a priori* content. As Shepherd writes of her 1824 and 1827 books, 'the subjects of the two Essays are capable of being considered independently, yet of throwing a mutual light upon each other.'... 'The analysis, therefore, of the operations of mind from infancy, throws light upon the knowledge we have of cause and effect; and the relation of cause and effect when fully known and established, affords the only method of *proof* in our power, for the knowledge of external existence.'[dxvi] Such an account, she says, will not amount to 'reasoning in a circle, if by carefully defining the nature of *internal* and *external* existence of *objects perceived and unperceived,* we gain thereby clearer ideas of the *method and action of causation*.'[dxvii] The aspiration to a systematic philosophy is already apparent in this statement. But there are also aspirations to an axiomatic system apparent in Shepherd's work, and this will also become increasingly apparent.

The tendency toward systematic thought is evident in Shepherd. Clearly there are grounds for adding thinkers such as Kant and Brown to the list of influences on Shepherd. Like them, Shepherd was influenced by the enlightenment ideal of systematic thought. She sought to incorporate a wide range of topics under a small set of assumptions, according to the precepts of those in her circle. In this respect, the links to Kant's philosophy of science, whether direct or indirect, are readily apparent in Shepherd. For Kant's thought continually points to the epistemic role of subsumption of empirical generalizations under more abstract and even *a priori* features of general laws and their concepts. As we shall see, Shepherd's theory of representation, her assumption that 'bottom up' elements will meet those from 'top down', as well as her arguments refuting Berkeley, contain further echoes of Kantianism.

Mill, Ricardo, and Shepherd also share a number of specific philosophical and methodological presuppositions in the philosophy of mind -- presuppositions explicit in Condillac and Brown. With Brown, they share a fundamental commitment to empiricist associationism -- and a desire to supplement associationist psychology with something rationalistic. As we have seen, Brown's philosophy focussed of the development of a single foundational concept, that of causality. This same approach is adopted by Shepherd, who sees the causal relation, in conjunction with a 'scientific' analysis of the operations of the mind, as the basis for a secure foundation for knowledge. In Shepherd's metaphysics, the causal relation is also fundamental. The two thinkers, in fact, share much in common. According to Shepherd, the fundamental problem with Brown is that he has grievously erred in his basic analysis of the foundational concept of causality. Shepherd develops her philosophy by drawing out the implications of what she takes to be the correct notion of causality, and the correct theory of representation, based on her observations of the workings of the mind. Finally, Brown and Shepherd share in the desire to develop a metaphysical system that could answer 'atheists'.

It is very hard to establish the precise direction of influence between Shepherd and her friends. It is, however, much less difficult to find common sources for them. There is evidence in the

group of an emerging interest in scientific method. In this regard, Mill, Ricardo, and Shepherd all looked to criteria such as the unity of knowledge, and to *a priori* concepts and laws for inspiration in the wake of Hume. Mill and Ricardo differ from Shepherd in seeming to place even greater emphasis on deduction in their theories. Shepherd, in any case, develops her theory in a way that appears to balance inductive and deductive methods. Shepherd, Brown, Mill may also have been influenced by Villers' Kant -- as well as Villers' reading of Condillac as proto-Kantian. In addition, all three were in Edinburgh around the time of Willich's German classes, and may well have learned something of Kant from him. The influence of a systematic philosophy can't be overlooked if we are to understand Mary Shepherd's work. For it is this framework, and the return to Kant studies, that helps us to discern the structure and aims of her work. In Shepherd's thought, the systematic project is explicitly conceived as a union of inductive analysis and a deductively justified concept of causal necessity.

On a final note, it is worth remarking that Shepherd, along with Mill, Mathus, Ricardo, and others, must be counted among the group of 'dangerous' thinkers that had affronted William Kerr in 1807. Recall that Kerr had charged Leslie and Malthus with being among those in the habit of mixing together speculative, mathematical truths with *real* truths in order to 'give their speculative opinions the semblance of truth' and to 'change truth into the semblance of a lie.'[dxviii] While Kerr's linking of the doctrine of causality with political subterfuge might at first seem accidental, attenuated, or spurious, the connection was not scoffed at in Shepherd's day. Richard Whately and Mme de Staël openly joked about the connections between abstract notions like causality and revolution -- but underneath the jokes lay the recognition of the simmering social unrest and its attendant ideological controversy. For the philosophical radicals and political economists, the idea of connections reaching from abstract concepts such as causality to the social order was not in fact absurd. However, whether the causes of social unrest were to be located in liberal ideologies, as the conservatives maintained, was a matter of some dispute. Another way to see the issues was in terms of economic and social conditions and their root *causes* -- and it was to this very analysis that the philosophical radicals would turn.

4.3 Causality and the Unity of Knowledge

Shepherd rejects the definition of causality based on antecedence and subsequence that is fundamental to Hume and the later empiricists. For Shepherd, ideas of cause and effect are always implicit in the representation under analysis, because causality is mixed together with ideas of sensations in the very act of representation. This is not an entirely new view of representation. It has earlier Continental roots, especially, but not exclusively, in Kant. However, it turns out that Kant's own views on representation contain several elements in common with Shepherd's, and are helpful in appraising the aims and significance of Shepherd's own philosophical contribution.

Kant's philosophy is influenced in important ways by both German rationalist metaphysics and British empiricism. As the Leibniz-Clarke correspondence makes clear, thinkers working in these traditions disagreed over epistemological, metaphysical, and physical aspects of Newtonian science. One area of disagreement concerned matter theory. Leibniz was committed to a force-based concept of matter, and his reading of Newton (now seen as controversial) was that Newton favored an atomistic view on which ultimate particles of matter are impenetrable to forces. As the Leibniz-Clarke correspondence makes apparent, the physical theories of Newton and Leibniz are not only based on ontological differences, they are the result of very different methodological presuppositions, including presuppositions about how one reasons from effects to causes and from causes to effects. Newtonian physics arrives at its conclusions using definition, geometrical analysis, observed phenomena, and a combination of the methods of analysis (reasoning from observed effects to causes) and synthesis (reasoning from proven causes to further effects). Leibniz arrived at his conclusions by using a relatively small set of

metaphysical and epistemological principles to interpret the observable phenomena. Much of the disagreement between the two thinkers boils down to a disagreement about the appropriateness of each of the methods of causal reasoning.

By the nineteenth century, the Leibniz-Clarke dispute was well known to scholars. Given Newton's apparent methodological commitments, as voiced through Clarke, one of Newton's remarks in his *Principia* has often struck commentators just as it did John Leslie, as a puzzling and anomalous. Leslie's fateful note, you will recall, had been a criticism of the methodological soundness of Newton's speculation about aether as a medium through which gravitational forces might work. In particular, it has been difficult to understand the sense of the distinction that Newton intended when he claimed that gravity was a *universal,* but not an *essential* property of matter. Here are the remarks in Book III, Rule II of the *Principia*, that have given commentators considerable pause:

> For the argument from the appearances concludes with more force for the universal gravitation of all bodies than for their impenetrability; of which, among those in the celestial regions, we have no experiments, nor any manner of observation. Not that I affirm gravity to be essential to bodies: by their *vis insita* I mean nothing but their inertia. This is immutable. Their gravity is diminished as they recede from the earth.[dxix]

To those with an interest in Newton's alchemical work, these remarks appear somewhat less puzzling. For it is now quite well known that Newton did extensive alchemical work on the 'Star Regulus of Antimony', nearly all of which remains unpublished. What remains of the work is a copious set of notes about the appearance of net-like, geometrical patterns formed in the crystallization process of the Star Regulus.[dxx] Given the nature of his experimental work, it is likely that Newton supposed that an aetherial medium left traces of geometrical patterns, traces that in turn represent visible effects of the original forces of nature. Newton speculated that 'all bodies, like networks, allow magnetic effluvia and rays of light to pass through them in all directions', and suggested that it was by the force of nature that 'the first seeds of all things' come together 'geometrically in net-like figures.'[dxxi]

In the context of his times, Newton's speculation about aether is not all that surprising. Forces in his day were generally not well understood, and the idea of attraction at a distance was repugnant and strange to many. If Newton did suspect that a universal aetherial medium existed, and if he hoped to find a unified account of force laws governing all matter, then his reluctance to affirm that gravity is essential to matter may reflect his unwillingness to commit to gravity as an ultimate and irreducible force. And, as Newton realized, his work proved the *universality* of gravitational effects, but not that gravity, rather than some other force, was *essential* to matter. Contra Leslie, Newton's methodological instincts were, after all, quite sound. Indeed, Newton acknowledges that his alchemical work is entirely speculative. He writes that 'I am far from affirming that my views are correct, and I acknowledge their great imperfection, nevertheless they are simple and easy to conceive, and of the same kind as the natural philosophy of the cosmic system which depends on the attractive forces of greater bodies.'[dxxii]

Kant, though schooled in the German tradition of deductive metaphysics, often expressed enthusiasm for Newtonian science. Kant obviously understood the problems set out in the Leibniz-Clarke correspondence, and he eventually came to reject Leibniz's physics. Moreover, following his remarks in his 1747 *Thoughts on the True Estimation of Living Forces,* we can also assume that he was dissatisfied with the state of deductive metaphysics. Upon reflection, Kant offered the diagnosis that there existed an irreconcilable conflict between physical and metaphysical modes of thought. The solution was to begin again and to lay a proper epistemological foundation for both metaphysics and physics. Kant sets out to draw the proper demarcation between the spheres of natural philosophy and metaphysics, doing so with the

conviction that each had its role to play in our knowledge, and these roles could eventually be reconciled.[dxxiii] Kant then, is convinced that Newtonian physics stands in need of a proper foundation, and holds that 'what many say can be properly absent from physics is in fact its only support; it is metaphysics that brings light.'[dxxiv] But what will provide the new foundation for metaphysics and natural science? In 1786, Kant aims to develop the details of his foundation for physics in his *Metaphysical Foundations of Natural Science.* These details, it turns out, rest on his new metaphysics in his 1787 *Critique of Pure Reason*, which explains the foundations of knowledge at a very high level of generality.

Kant thinks that the new foundation for physics must rest on a new metaphysics -- a metaphysics that has an explicitly epistemological orientation. In the *Critique of Pure Reason*, he presents a radical re-conception of the methods and content of metaphysics; so radical that it evoked for Kant the image of a conceptual about-face, of a so-called 'Copernican revolution'.[dxxv] Kant's claim is that the limits of what metaphysics can say about the world are discovered through an analysis of the most abstract and rudimentary elements involved in the operations of our faculties of understanding, imagination and reason. He develops this general epistemological doctrine, the critical philosophy, in his *Critique of Pure Reason.* For the critically awakened Kant, metaphysical explanation no longer aims to capture the basically real features of the universe through deductive reasoning, but rather becomes subject to a set of demands of reason in its effort to regulate human inquiry. Hence, after the critical turn, the role of metaphysics is no longer to fulfil the tasks Leibniz that set out, that of exhibiting the original causes and forces underlying the phenomena of natural science. As Kant, explains, part of this recognition is due to the force of Hume's critique of basic metaphysical concepts such as causality. Hume's question, 'By what right does [reason] think anything could be so constituted that if that thing be posited, something else must necessarily be posited [?]', suggested a critique so penetrating that metaphysics would have to provide a new foundation for the grounds and possible extent of human knowledge. In the empiricist spirit, Kant claimed that 'Clear-headed philosophers' should 'admit nothing except what becomes directly known by the testimony of the senses.' For, the safe course reflects the fact that 'we can exhibit the laws of nature but not the origin and causes of these laws'.[dxxvi]

> He [Hume] demonstrated irrefutably that it was perfectly impossible for reason to think a priori and by means of concepts such a combination [e.g., of cause and effect], for it implies necessity. We cannot at all see why, in consequence of the existence of one thing, another must necessarily exist or how the concept of such a combination can arise a priori. Hence he inferred that reason was altogether deluded with reference to this concept, which she erroneously considered as one of her own children, whereas in reality it was nothing but a bastard of imagination, impregnated by experience...[dxxvii]

Kant saw Hume's critique of metaphysical concepts such as causality as not only undermining the old procedure in metaphysics, but as a threat to natural science, rendering it no better than fiction and fantasy. Kant 'tried whether Hume's objection [to causation] could not be put into a general form, and soon found out that the concept of connection of cause and effect was by no means the only concept by which the understanding thinks the connection of things a priori, but rather that metaphysics consists altogether of such concepts'.[dxxviii] Kant's response to the problem Hume had raised began with the identification of all of the relevant metaphysical concepts at stake -- 'I sought to ascertain their number' -- and then proceeded to try to find the justification for their use -- 'I proceeded to the deduction of these concepts.' Kant devised a special representation terminology to try to solve Hume's problem: he distinguished between *analytic* and *synthetic* judgments, and *a priori* and *a posteriori*. An analytic judgment is one in which there is a (partial) identity between subject and predicate. A synthetic judgment is one in which the predicate 'falls outside' the concept of the subject. For Kant, 'a priori' means 'independent from experience' and 'a posteriori' means 'derived from experience'.

Kant argues that the concepts and principles 'by which the understanding thinks the connection of things a priori' are synthetic and *a priori*. That is, representations of natural phenomena that extend our knowledge of things are the result of synthetic combinations of sense data, and elements that contribute to this synthesis, intuitions of space and time and concepts of understanding, are known *a priori*. The *Critique of Pure Reason* aims to establish that synthetic *a priori* knowledge is possible. Hence, Kant responds to Hume's doubts about whether science could rest on concepts such as causality by attempting to show the sense in which there are features in the concepts and propositions of science that supply a certain foundation for knowledge. These features are described in Kant's system of metaphysical concepts and principles, principles that also place formal conditions on the empirical concepts and laws set out in Newton's *Principia.* The metaphysical concepts and principles contain the necessary, universal, and objective elements that we discover as characteristics of our representations of the empirical world.

In sum, Kant holds that natural science presupposes certain fundamental propositions. The epistemological warrant for Newtonian science, its claim to objectivity and certainty, turns on its critical underpinning. Kant's special metaphysics provides a specific answer to this question by appeal to how the *a priori* elements of his critical formalism -- space, time, and the categories -- lend objectivity and necessity to the representation of matter and motion in Newtonian mechanics. Kant's special metaphysical reasoning in his *Metaphysical Foundations* reinforces the general thesis of the Copernican revolution, offering Newtonian science as a case study in defense of his claim that knowledge must conform to a subject's faculties on understanding, imagination and reason. In carrying through the critical project in the direction of the concepts and laws of matter and its motions as conceived in Newtonian physics, Kant gives content to the very abstract concepts and principles in his general metaphysics.

The appeal to *a priori* elements in representation is not the whole of Kant's answer to Hume. There are other methodological considerations -- second order desiderata that supply criteria for judging the status of a theory. For Kant, these criteria are linked to reason's drive to unify knowledge. Gerd Buchdahl has stressed the importance of reason's unifying activity in Kant's *a priori* foundation for science. According to Buchdahl, Kant's natural philosophy contains an essential distinction between 'nature' and the 'order of nature'. In the *Metaphysical Foundations*, the categorical principles are developed into specific laws in understanding, and these define the possibilities for 'nature'. However, it is reason which requires us to seek unity in science, and which ultimately secures the sort of necessity for the lawlikeness which we find in the 'order of nature'[dxxix] Consider what Kant says in the Doctrine of Method:

> Reason is never in immediate relation to an object, but only to the understanding, and it is only through the understanding that it has its own [specific] empirical employment. It does not, therefore create concepts (of objects) but only orders them...[dxxx]

The role of reason in natural philosophy, Kant goes on to say, is to 'assist the understanding by means of ideas, in those cases where the understanding cannot by itself establish rules, and at the same time to give to the numerous and diverse rules of understanding unity...'.[dxxxi] What Kant indicates then, is that understanding plays an important role as a mediator, and this suggests that the need for a transition to reason is constrained as it were, 'from below', rather than 'from above'. Hence, empirical lawlikeness is a result of the regulative function of reason, although there is also a sense in which the necessitarian character of laws emerges from understanding:

> The lawlikeness of the empirical laws of Newtonian science (e.g. of Kepler's laws, Galileo's laws) has now been seen to be a function of the architectonic of reason; it is injected, so to

> speak, 'from above'. There are, however, certain privileged principles whose necessitarian character is established 'from below'. They are part of Kant's 'special metaphysics of nature', being contrasted with his 'general metaphysics' (i.e. the doctrine of the Transcendental Analytic) where the former, instead of being occupied only with the concept of nature in general, involves the introduction of a specific aspect of nature, viz. nature qua 'matter' -- a concept which Kant declares to be 'empirical'.[dxxxii]

Thus, reason systematizes Kant's transcendental concepts and principles by projecting a 'synthetic unity objectively', and thereby yields an 'order of nature', but the elements in this order are strictly constrained by understanding, which alone has the capacity to prescribe concepts of objects.[dxxxiii] There are several interesting things to note in connection with Kant's view of the 'order of nature' and its connection to 'nature'.

Firstly, in the *Critique of Pure Reason*, Kant argues that empirical laws must be thought of as *necessary* because reason regards them as part of a systematic and unified theory of nature. Buchdahl has established this point in some detail. Buchdahl writes that 'In so far as empirical generalizations are to be called laws they must be regarded as necessary. And Why? In virtue of 'the principles of the unity of the manifold' -- which is here a reference not to the unity of the understanding but to reason or reflective judgement.'[dxxxiv] Kant describes the relationship between particular empirical generalizations and the unity of the 'order of nature' in just this way:

> ...that we are justified in declaring all possible cognitions -- empirical and others -- to possess systematic unity, and to be subject to general principles from which, notwithstanding their various character, they are all derivable -- such an assertion can be founded only upon a transcendental principle of reason, which would render this systematic unity not subjectively and logically -- in its character of a method, but objectively necessary.[dxxxv]

According to Kant then, reason demands that we regard our experience of nature as part of an order of nature such that particular generalizations are subsumed under more general ones. As such, empirical law-likeness is partly the result of an embedding in a system or theory under a few general principles. The philosopher of science, Carl Hempel, makes a similar point in the familiar terminology of twentieth century philosophy of science. On Hempel's account, empirical laws are valid in so far as they are subsumable under a general theory -- a theory being a unified small set of general laws. Moreover, for Hempel, empirical laws serve to reinforce the unity in natural science by 'connecting events in patterns which are usually referred to as explanation and prediction'.[dxxxvi] Hempel argues that when the subsumption requirement is met, predictions and explanations of empirical instances of a law will not fail to hold:

> Thus, the explanation of a general regularity consists in subsuming it under a more general law. Similarly, the validity of Galileo's law for the free fall of bodies near the earth's surface can be explained by deducing it from a more comprehensive set of laws, namely Newton's laws of motion and his law of gravitation, together with some statements about particular facts, namely about the mass and the radius of the earth.[dxxxvii]

So, like Kant, Hempel draws an essential link between the status of laws, subsumption and the unity of natural science. This similarity between Hempel and Kant provides a certain amount of clarification of what Kant meant by his subsumption requirement.

For Kant then, laws of nature are 'formally' characterized as both *universal* and *subsumable* within a unified system of nature. Kant's own claims in the *Critique of Pure Reason* make it clear that both the understanding's prescription of 'nature' and reason's unifying activity under an 'order of nature' provide important criteria of empirical truth in critical philosophy. In the first

instance, Kant writes that reason's unity ' ...aids us in discovering a principle for the understanding in its manifold and special modes of employment, directing its attention to cases which are not given, and thus rendering it more coherent.'[dxxxviii] The second point is evident in passages such as the one below:

> For the law of reason which requires us to seek for this unity is a necessary law, inasmuch as without it we should not possess a faculty of reason, nor without reason a consistent and self accordant mode of employing the understanding, nor, in the absence of this, any proper and sufficient criterion of empirical truth. In relation to this criterion, therefore, we must suppose the idea of the systematic unity of nature to possess objective validity and necessity.[dxxxix]

It is important to note, then, that Kant's view is that reason's unifying activity is *determined by what is given in the understanding* -- an important point that sometimes gets overlooked.

Like Kant, Shepherd rejects Hume's definition of causality. Her positive claim is based on a kind of *a priorism* regarding the causal axiom. Shepherd makes an effort to show why Hume's definition based on 'the customary antecedency and subsequency of sensible qualities' is inadequate. Shepherd argues that it is Hume's mistaken analysis of causal objects and their agency that leads him to hold the incorrect view that causality should be defined in terms of antecedence and subsequence:

> This impossibility of sensible qualities, being the productive principle of sensible qualities, lies at the root of all Mr. Hume's controversy concerning the manner of causation; for he, observing that such ideas could only follow one another, resolved causation into the observations of the customary antecedency and subsequency of sensible qualities. But objects, when spoken of and considered as causes, should always be considered as those masses of unknown qualities in nature, exterior to the organs of the sense, whose determination of sensible qualities to the sense forms one class of their effects; whereas philosophers, (with the exception of Berkeley) and mankind in general, look upon the masses of sensible qualities after determination to the senses as the causes, the antecedents, the productive principles of other masses of sensible qualities, which are their effects or subsequents; a notion naturally arising from the powerful style of the associations in the mind, and which our Maker has ordained for practical purposes;--but monstrous when held as an abstract truth in analytical science.[dxl]

Hence, Hume errs because his definition of causality is itself based on the mistaken ascription of causal agency to sensible qualities. Sensible qualities, according to Shepherd, are noticed as dependent effects before the mind. But the temporal associations in the perception of qualities is due to the manner in which they are noticed by the mind, rather than to the character of either the perceived or exterior objects themselves.

Shepherd's own view of causal objects, as we have seen, requires attention to the distinction between exterior and perceived objects. Perceived objects are compounds of ideas of sensible qualities and ideas of cause and effect and are determined to the mind in representation, but ultimately due to exterior causes. For Shepherd, compound objects are inner objects that result from the mental union of sensible qualities and ideas of causes; whereas exterior objects are the unperceived causes of the various species of sensible ideas.[dxli] According to Shepherd, only compound objects are directly perceived by the mind. The unperceived, exterior objects -- or more properly their relations -- are known by inference alone. Shepherd relies on her distinction between perceived, compound and unperceived exterior objects and a metaphysical and epistemological sense of necessary connection to explain her views on necessary connection:

> The necessary connection therefore of cause and effect arises from the obligation, that like qualities should arise from the junction, separation, admixture, &c. of aggregates of external qualities. But the necessary connection of *invariable antecedency and subsequency* of successive aggregates of sensible qualities' from the necessity 'that there should be invariable *sequences of effects*, when one *common cause* (or exterior object) mixes successively with different organs of sense, or various parts of the human frame, & c. [dxlii]

In other words, in the first instance, necessary connection supposed to be a feature of exterior things in a metaphysically deterministic world. Properly speaking, 'all of the exterior and uncombined objects, whose junction is necessary to an event' are causes that lead up to the proximate cause that we identify with an event.[dxliii] Hence, there is a sense of metaphysical necessity in exterior objects implicit in Shepherd's thought. The second kind of necessary connection described above is the sense of necessity that we discover through examination of our representations. This is the *a priori* sense of causal necessity that is the main focus of her philosophical argument against Hume. As Shepherd reasons, when a 'common object' mixes with the sense organs, we notice a succession of qualities. When the common object gives rise to an invariable sequence of qualities such that it passes the *experimentum crucis*, we say that we have discovered a necessary connection of cause and effect.[dxliv] This is an epistemological sense of necessity, a sense that is possible, for Shepherd, because the world is metaphysically determined. As Shepherd explains, it is important to distinguish between the 'perceived internal qualities' and the 'external aggregates of qualities', 'which form the determining causes of these on the mind'.[dxlv] In addition to developing the above general accounts of necessary connection, Shepherd holds that causal natural laws contain necessity. Her argument shows that the necessity of empirical laws is linked to their subsumption under the causal axiom. Shepherd's view is interesting not only in view of comments on Hume and causality, but also because they show a methodological interest in subsumption under the causal axiom.

Shepherd's methodological appraisal of Newton begins with her expression of agreement with LaPlace's assessment of the necessary status of the law of gravitation.[dxlvi] Shepherd agrees with LaPlace's assessment that Newton would have attributed the same necessity to this physical law as to the demonstrative proof of his binomial theorems.[dxlvii]

> In short, did there exist the slightest shade of difference between the degree of his assent to this inductive result, and that extorted from him by a demonstration of Euclid? Although, therefore, the mathematician, as well as the natural philosopher, may without any blameable latitude of expression, be said to reason by induction, when he draws an inference from the known to the unknown, yet it seems indisputable, that, in all such cases he rests his conclusions on grounds essentially distinct from those which form the basis of experimental science.[dxlviii]

Shepherd does, however, raise one important quibble with LaPlace. She says that LaPlace is imprecise in his description of Newton's method. For, at base, the necessity of Newton's binomial theorem and the law of universal gravitation must have one and the same foundation. Indeed, *'the science of mathematics is truly but one branch of physics*' since 'all the conclusions its method of induction demonstrates, depend on the truth of the causal principle 'That like cause must have like effect'.[dxlix]

As Shepherd clarifies what has in mind, it becomes apparent that she is saying that the necessity of the causal axiom is the single foundation for necessity in physical laws and in mathematics. For, 'when objects are formed the same upon one occasion as another, their qualities, properties, and effects, will be similar.' She adds that 'It is this proposition on which mathematical demonstration, and physical induction equally, and only, rest for their truth.'[dl] Thus certainty in mathematics is dependent on the same manner and action of causation that we

trace in the '*original* FORMATIONS *of the objects'*. For this reason, true physical laws are not merely a contingent, but also necessary truths. Similarly, mathematical demonstrations involve objects that resemble one another 'only *because there is nothing to make a difference among them*.' If, as Shepherd claims, a cause 'C' is properly represented as a compound of 'A X B', so that 'C' is included in the mixture of 'A X B', then the necessity underlying causal connection will apply to mathematical and physical representations. Thus, in the case of mathematical representations, the results of arithmetic combinations are included in their statements.[dli] Physical representations follow along similar lines. New qualities that appear to arise result from a union of qualities in such a manner that every repetition of that union will always give rise to that same new quality.[dliii] The argument then, on the status of mathematical and physical induction, once again points us back to the foundation in the causal relation and its role in representation.

Shepherd's methodological points are interesting to those who seek to understand the philosophical foundations of causal natural laws. As a general claim about how we are to understand the necessity of a physical law, they represent a kind of account not unlike that given by some recent thinkers regarding an 'epistemological ascent' to necessary status. Like Kant, Shepherd is sensitive to the epistemological virtues of subsumptive causal laws in science and metaphysics. As we have seen, subsumption confers explanatory unity, and increases our confidence in the scientific status of the most general laws of a theory. And, according to some, subsumption is a criterion of *necessity* for empirical laws. Hence, Shepherd is to be credited not only for her awareness of the need to combine inductive and deductive methods in scientific experimentalism, her notion of testing as a method for distinguishing accidental from lawlike generalizations, but also for her sense of the significance of subsumption in scientific theories. Whether or not she took an interest in subsumption under the causal axiom because she took explanatory unity or systematicity as marks of truth or because she saw subsumption as a mark of the necessity of physical laws is open to further investigation. But one thing that is clear, however, is that Shepherd departs from the majority of her empiricist counterparts by requiring that the criteria of good science also be guided by 'top-down' considerations -- by the very sort of abstract epistemological considerations that her common sense counterparts were loathe to introduce. Shepherd also invokes a wider view of the sense of subsumption in knowledge than her political economics counterparts. For Shepherd, as we shall see, systematic unity extends from the causal axiom to a wide range of subjects, from mathematics to the sciences, and, ultimately, to theology.

4.4 Systematic Philosophy and the 1827 *Essays*

There is a plausible argument to be made that Shepherd's 1827 *Essays* were not developed as a system of ideas. It is certainly true that the essays appear to be a motley collection of arguments touching on a variety of subjects connected with external perception. And, as they were evidently collected for publication without having been prepared as a systematic philosophy, the question of whether a there is a systematic philosophy underlying her 1827 work is one that needs to be addressed. Indeed, Shepherd's presentation in the 1827 *Essays* seems anything but systematic.

Much of the reasoning is directed against Berkeley, and appears to have little to do with the theory of representation in her 1824 treatise. For example, when Shepherd uses syllogistic reasoning to dismantle Berkeley's views; her style of argument draws on the canons of deductive logic and the principle that one should avoid presupposing more than that to which a reasonable interlocutor would assent. Indeed, logic and analysis were always central preoccupations for Shepherd, who recommends that □analytical philosophy□ seek the □scrutiny of the most rigid analysis.□[dliii] In this regard, there is little doubt that Whately's logic assisted Shepherd in her specific criticisms.

Careful perusal of the 1827 book shows that Shepherd supplements her negative criticisms with positive arguments. These arguments show how her alternative theory of representation makes sense of the inference from the marks of objective reality to knowledge of an external world. It is these latter arguments that develop the systematic character of her work. To wit, they show how Shepherd's whole philosophy ultimately hangs on her theory of representation -- on her claim that sensations of ideas such as cause and effect mix together with sensations of sensible qualities in representation. As we have noted, Shepherd herself explains in the 1827 introduction, an effective response to Berkeley□s doubts about external existence requires an objective account of causality. For □...the question concerning the *nature* and *reality* of external existence can only receive a satisfactory answer, derived from a knowledge *of the relation of Cause and Effect.*□ [dliv] Unfortunately, apart from this remark (and the occasional aside), Shepherd gives little indication that she takes herself to have exhibited a system in the 1827 *Essays*. However, in the end, her substantive arguments against Berkeley the soundness of Berkeley's idealist position depend on her theory of representation and its *a priori* causal axiom. In the following section, I will argue that there is in fact a systematic element implicit in Shepherd's 1827 *Essays*.

Unfortunately, the contrast in Shepherd's argumentative styles in the 1827 *Essays* can be misleading on a cursory reading. Let's begin looking at the arguments to see why this is so. First, consider Shepherd□s criticism that Berkeley□s argument leading to subjective idealism involve logical errors. Recall first that Berkeley adopts the principle □*esse*□ is □*percipi* □ early on in *The Principles of Human Knowledge*.[dlv] He thinks that this principle, from which it follows that no sensible object could have an existence distinct from its being perceived by the understanding, ought to be granted by the empiricist. [dlvi] Shepherd advances several arguments against this position, and, in particular, rejects Berkeley□s argument that sense objects are nothing but ideas and sensations:

> For if the major proposition stands, □Our ideas and sensations, are the only things we *perceive*,□ and the minor, □Objects are the things we perceive by sense,□ the conclusion, viz. □Therefore *objects* are only our ideas and sensations,□ does not logically follow, because the middle term would then consist of □*two different parts, or kinds*, of the same *universal* idea,□ i.e., the idea of perception in general; □*and this will never* serve to show whether the subject and predicate agree, or disagree.[dlvii]

Shepherd□s point against Berkeley is that his argument equivocates on the sense of □perception□. Specifically, □perception□ is taken in the major premise to be the perception of particular sensible ideas and in the minor premise to be consciousness of the use of the sense organs in relation to outward objects.[dlviii] These are, in fact, two different ways of talking about perception. As Shepherd writes, the □conscious use of the mechanical action of the five senses in relation to other beings than the mind□ and the □*mental consciousness of* PARTICULAR SENSIBLE QUALITIES *only*□ are different species of the universal idea of perception.[dlix] The former usage, Shepherd thinks, assumes that particular ideas cannot be perceived unless mechanically imprinted on sense organs by outward objects.

This objection to Berkeley's account of the sense organs is best understood in light of realism typical of the philosophy of Shepherd's day. Like her Scottish counterpart, Thomas Brown, Shepherd finds it psychologically impossible to imagine sense organs as mere complexes of ideas in the minds of perceivers. Brown, however, has nothing more to offer against Berkeley than incredulity. He rejects Berkeley on the grounds that 'The instinct, by which we consider the sensation of our mind, as *marks* of the existence of an external world, is too powerful to be weakened by any theory...'.[dlx] Brown's arguments would be insufficient to force Berkeley, or an extreme sceptic, to concede his sceptical view. That said, many would object to Berkeley's vagueness on distinction between general conscious perception and perception by means of the

sense organs. If there is a fundamental difference in the character of our sensations, then Berkeley should not be allowed to gloss over the fact in his syllogism. Berkeley never offers a clear account of what it means to say that ideas arise through the mediation of sense organs. Shepherd thinks that if pressed on the point, he would be forced to conclude that sense organs are more than □*ideas and sensations in a mind perceiving them*□.[dlxi] Specifically, he would be forced to admit that sense organs are mechanical instruments that □modify exterior existences□ so that external and independent causes give rise to ideas in us.[dlxii] But this is to rely on a conception of the world that Berkeley explicitly rejects as a foundation for his own theory of ideas; hence, Berkeley's description of ideas being □imprinted on the senses ... contains the very doctrine he is controverting.□[dlxiii] On the one hand, this criticism of Berkeley can be criticised as being one that is not especially charitable, since Berkeley likely has in mind that spirits imprint ideas on the senses.[dlxiv] On the other hand, we can sympathise with Shepherd to the extent that Berkeley leaves the basis for sensible ideas of human embodiment and the sense organs something of a mystery.[dlxv]

Berkeley builds on his conclusion that □Sensible objects are only our ideas and sensations□ in formulating his 'master argument' against materialism. The master argument draws on the above argument and leads to the conclusion that □No sensible objects are things that exist unperceived□. This argument cuts against the realist view that there exists an unperceived, external substratum of material things. For, as Berkeley points out, his argument shows that the materialist can have no idea of what she is talking about when she refers to an *unperceived* material substratum of external objects.[dlxvi] The master argument is an important step in Berkeley□s attack on the representational realist account of nature. Berkeley's defence of subjective idealism is based on his argument to show that other spirits are *causes* of our ideas. His argument, invokes his claim that ideas are passive and is based on his 'likeness principle', that □nothing can be like an idea except another idea□.[dlxvii] In this case, Berkeley reasons that all of our ideas are passive and that ideas can only be like other ideas, concluding that our ideas cannot cause one another. But, at the same time, Berkeley reasons, sensible ideas are effects, and as such, they must have causes.[dlxviii] Indeed, Berkeley appears to invoke the causal principle that all effects have causes, for he says that □There is therefore some cause of these ideas whereon they depend, and which produces and changes them.□ What are these causes, he wonders? Berkeley takes it that the intelligibility of suggesting that causes originate in a material substratum has been ruled out. Since sensible ideas must be caused by something, and, since cause must be active, Berkeley reasons, active spirits must be the causes of our ideas.[dlxix]

Shepherd□s criticism of this argument is that it invokes a term that Berkeley, by his own lights, cannot claim to know. Berkeley's argument involves the claims that all that exists are □spirits□ and □ideas□, and that spirits are the causes of ideas. Shepherd charges that Berkeley can have no notion of □cause□ at all; Berkeley has already argued that □ideas are not causes□ and that he □knows nothing but ideas□. So what sort of idea of cause could Berkeley possibly have?[dlxx] It would appear that Berkeley□s master argument can be turned against him to show that he can have no idea of what he is talking about when he refers to an immaterial substratum. As Shepherd writes, □it is plain we can know no more of activity, indivisibility, and simplicity, as applied to substance, called mind, than of inertness, divisibility, &c. applied to another sort of substance, called matter.□[dlxxi] While Berkeley is not here charged with equivocation, he has erred in using a term that can have no exact meaning on his own theory of ideas. In view of this, it seems unfair of Berkley to allow himself the inference to spirits while denying the materialist her inference to a material substratum.[dlxxii] Berkeley, of course, defends his view by maintaining that our ideas of spirits are □notions□ that arise within us through volition, leading us to infer that spirits are causal agents. Shepherd is suspicious of the tactic, and with good reason. For Berkeley□s notions of spirits are based neither in ideas of external causes nor in ideas of sensible qualities. How then, does the will acquire such notions of active spirit from our passive

ideas? To be consistent with his claims about the passivity of ideas, Berkeley must maintain that we infer the existence of active spirits. But Shepherd wonders what the details of this account involve. How can the will 'call upon an idea, when before it begins to call, it must know what it wishes to call'? Her point is that we 'must have consciousness of the idea in question, which as an object associated with another idea, can and does truly act as a cause in order to introduce it.'[dlxxiii] If Shepherd is right, then we do, after all, directly perceive ideas of active causes.

Shepherd does a fair job using reasoning to uncover the question begging elements in Berkeley. She concludes that Berkeley's argument for subjective idealism is mistaken. Since her above negative arguments do not, on the face of it, depend on her own theory of representation, the role of her representational theory in defending external perception is unclear. Indeed, Shepherd's substantive arguments for external perception need separate attention in order to ensure that her full response to Berkeley is charitably reconstructed. And, with Shepherd's positive theory to illuminate her arguments, she has more to offer against Berkeley's subjective idealism than at first meets the eye. In order to see this, we must recall once again that the 1827 and 1824 treatises are conceptually connected. The point is remarked upon by Shepherd, but is also evident from a philosophical perspective.[dlxxiv] In the later work, the philosophical aim is to apply the doctrine of cause and effect to the question of the existence of an external world. Once again, Brown is helpful in setting the context for Shepherd's philosophical position. For having closely studied his *Observations*, it is unlikely that Shepherd would have missed Brown's remark about Bishop Berkeley. There Brown says, provokingly, that the perceived dangers of Hume's doctrine pale in comparison with those occasioned by Berkeley's doubts about external existence. According to Brown, Berkeley's denial of our grounds for belief in external existence is 'completely unanswerable', so that 'magnificent arguments for the existence of a Deity were annihilated in the general desolation powered by a few propositions!' [dlxxv]

With her theory of representation in mind, Shepherd identifies the general problem in Berkeley's view, as she sees it. The principal difficulty, Shepherd thinks, lies in his failure to carefully distinguish between ideas of external causes, ideas of sensible qualities, and the 'capacity for sensation in general', or mind. For, only given clear and consistent distinctions between these, can coherently think of sense organs 'as mechanical instruments; which powers modify exterior existences, ere they reach the sentient capacity' so that the 'general power of feeling becomes modified'.[dlxxvi] Moreover, such careful distinctions are required for a correct definition of the term 'object' and for a plausible theory of representation. Shepherd notes that 'I do not agree with him, in stating, that *objects* are nothing but what we perceive by sense, or that a complete enumeration is made of *all* the ideas which constitute an apple, a stone, a tree, or a book; in the summing up of their *sensible qualities.*'[dlxxvii] So it turns out after all that Shepherd's rejection of Berkeley is in part based on rejection of his theory of representation. Unlike Berkeley, her own theory places emphasis on the distinction between general conscious perception and the various kinds of sensations of qualities and ideas of which we are conscious.

Like Berkeley, Shepherd's epistemology draws a close connection between ideas and sensations; indeed, she defines the term 'idea' as a distinct class of sensation.[dlxxviii] The mix of sensations involved in representation consists of both sensations of ideas and sensations of qualities. According to Shepherd, sense objects are 'compound beings' consisting of various distinct sensations; specifically, sense objects are composed of *sensations of sensible qualities* that arise through the use of sense organs, and *sensations of ideas* of causes that arise in understanding. Thus, ideas and sensible qualities are distinct species of sensations, but 'the conscious powers of the understanding, and the senses, are blended together in man' so that 'they are acting in concert when any object affects the senses.'[dlxxix] As Shepherd writes, 'Now objects in our conscious apprehensions are compounded of each of these kinds of ideas; or rather of sensations of sensible qualities, and sensations of ideas. 'They are not only blue or red, sweet or sour, hard or soft, beautiful or ugly, warm or cold, loud or low; but the ideas of their

causes are included in their names as continually existing, and that even when the organs of sense are shut.'[dlxxx] Shepherd sums up her charge against Berkeley as a failure to recognise that sense objects are always compound objects in which general ideas of causes mix together with sensible qualities, leads him to an incomplete definition of the term □object□:

> The logical error, therefore, of Bishop Berkeley on this part of the subject, is an *incomplete definition*; for no definition is good which does not take notice of *all* the ideas, under the term; and in every object of sense which the mind perceives, the knowledge of its *genus*, as a general effect arising from a general cause independent of mind, *is mixed with the sensations or ideas resulting from its special qualities affecting the same*.[dlxxxi]

Contra Berkeley then, Shepherd□s view is that sensible objects are complexes that combine sensible qualities *and* ideas of causes. She often repeats the point, and it is clear that the foundational role attributed to ideas of causes takes her theory of representation well beyond standard empiricist theories. Berkeley and Hume adopt Locke's view that □...the objects of human knowledge ... are either ideas actually imprinted on the senses, or else are such as are perceived by attending to the passions and operations of the mind, or lastly, ideas forged by help of memory and imagination.□[dlxxxii] While it is true that Shepherd, Locke, and Berkeley all hold that mental operations act on sensible qualities, Shepherd rejects the view that sensations of sensible qualities enjoy either temporal or epistemological privilege as simple components of representations. What she maintains is that particular ideas, such as general ideas of causes, are mixed together with sensible qualities *in the very moment of representation*. So unlike those empiricists who conceive of general and abstract ideas as products of mental operations upon sensible ideas, Shepherd denies that the operations of understanding are introduced in representation only *after* collections of sensible impressions arise in the mind.[dlxxxiii] This view places her at variance with Locke, Berkeley and Hume, although not with Thomas Brown. Brown also conceives of causal belief as immediate to acts of representation. Representation, he thinks, requires that we suppose causal beliefs to arise immediately in an act of faith. But Brown's view appears to commit him to the claim that faith rather than reason is the foundation of the causal relation, and Shepherd explicitly rejects this view.

Not only does Shepherd reject Brown's negative verdict that Berkeley□s position is □completely unanswerable□, her own reply to Berkeley can be read as a direct response to Brown's more specific charge that Berkeley and Kant share 'precisely the same doctrine'. In his 1803 review of Charles Villers' *Philosophie de Kant ou Principes Fondamentaux de la Philosophie Transcendentale*, Brown charges that Kant's position collapses into Berkeley's doctrine, not only because of his 'denial of space', but also because, for Kant, causation is 'phenomenal only'. Specifically, Brown charges that Kant's appeal to space and time leads his position to collapse into Berkeley's doctrine, and that the problem rests with Kant's account of causation:

> The idea of anything external to ourselves is confessed to involve space; yet with the denial of space, the reality of objects external to ourselves is affirmed; and the affirmation is peculiarly frivolous, since *real* objects, not having causation, which is *phenomenal* only, cannot affect our sensibility. It is not enough to say against the solitude of self which the consistent discipline of Berkeley must adopt 'that our mind revolts, and is indignant of the very idea' or that 'he professes a belief which is not human, and which, therefore, among human beings, can never be the doctrine of a numerous sect': for the argument is of equal force against transcendentalism, which, if consistent, is precisely the same doctrine with a new name...[dlxxxiv]

Shepherd's reply to Berkley takes up this very point about causation, and endeavours to show that objective knowledge of causal necessity, as described in her 1824 treatise, leads to knowledge of the external world. As Shepherd writes, □the subjects of the two Essays are

capable of being considered independently, yet of throwing a mutual light upon each other.□... □The analysis, therefore, of the operations of mind from infancy, throws light upon the knowledge we have of cause and effect; and the relation of cause and effect when fully known and established, affords the only method of *proof* in our power, for the knowledge of external existence.□[dlxxxv] Such an account, she says, will not amount to □reasoning in a circle, if by carefully defining the nature of *internal* and *external* existence of *objects perceived* and *unperceived*, we gain thereby clearer ideas of the *method and action of causation*.□ [dlxxxvi]

Whether Shepherd can avoid all circularity in her account depends on our granting her view that causal necessity is an objective feature built into sense objects in representation. What Shepherd maintains, it will be recalled, is that ideas of causes are so 'interwoven' and 'immediate' with the use of the sense organs that 'they ought always to be considered as forming a component part of the whole ideas which lie under the terms, THE OBJECTS OF SENSE.'[dlxxxvii]

Thus, Shepherd departs from the strict empiricism of her British counterparts. Brown, for example, claims that it would be impossible to isolate the subjective and objective elements in subjective perception, since they never exist apart. According to Brown, 'We own the subjectivity of our perceptions; but we are convinced of the impossibility of analysing them into objective and subjective elements; since to us, by the laws of our nature, these elements must ever coexist.'[dlxxxviii] Shepherd disagrees. Although she concedes that the senses and understanding 'are acting in concert when any object affects the senses', she holds that 'the understanding knowing the simplicity of mental sensation' can distinguish 'the varieties of the causes' and thus discover the subjective and objective elements in representation.[dlxxxix] Her epistemological view is that objective, *a priori* ideas of causes arise directly when outward objects affect the senses, so that such ideas are always included in the formation of compound objects:

> Now I repeat there is one sense in which it may be said that objects are perceived immediately, as existing outwardly, by the senses. It is this; the conscious powers of understanding, and the senses, are blended together in man; we are analysing them, but in nature they are united as intimately as are the prismatic colours in one uniform mass of light. This being the case, they are acting in concert when any object affects the senses. Therefore the understanding knowing the simplicity of mental sensation, it follows, that the varieties of the causes, (which create varieties in the effects,) are instantly perceived and detected, and that immediately with the conscious use of the senses; whilst also the mind as immediately mixes that idea of which the understanding is aware; viz, that theses varieties, as complex objects, continue to exist unperceived and independant, when unnoticed by the senses.[dxc]

It is worth taking note of the sense in which Shepherd's above argument is reminiscent of Kantian philosophy. Like many of Kant's early critics, Shepherd rejects the appeal to forms of intuition (taking them to lack genuine objectivity), so she clearly rejects this central claim of Kant's theory of representation. But we have already taken note of the centrality of *apriorism* and of methodological unity in her epistemology. In addition to this, Shepherd appears to offer a form of transcendental argument in defence of her claim that we have knowledge of external existence.

Like Kant, Shepherd's holds that the possibility of having knowledge of the real properties of things requires that we suppose the existence of an order of 'insentient existence'.
As Shepherd writes, 'time must be capable of being measured externally to the mind, by whatever could measure equality, such as the beat of a pendulum, &c' and 'this capacity of admeasurement must exist as a possible quality, capacity, or object in nature.' Accordingly, Shepherd's view supposes more than a merely phenomenal world; and her argument, it turns

out, depends on her claim that 'The senses and mind, also, may be considered as measures of the proportions of exterior objects'. For the very possibility of knowledge, Shepherd thinks, depends on an underlying order in what she calls, 'insentient existence'. Hence, Shepherd writes that the □assurance of other existences besides ourselves□ follows from the inference that □in order to support the phenomena, there must needs be other continuous existences than ourselves.□[dxci] Sense organs and outward objects must exist, since □*ideas* of colours cannot be imprinted on the eye; nor those of sound on the *ear*; nor those of extension on the *touch*; there are no such IDEAS, until *after* the eye, as an instrument, has been affected by *some sorts of outward objects*□.[dxcii]

Also like Kant, is Shepherd's proof of external existence involves a proof that we can infer objective properties of external things from the character of our representations. In this case, Shepherd argues that general ideas of causes are included in representations in such a way as to supply a rule from which we *infer* knowledge of exterior, continuing and independent existence. Sensations, she explains, are effects on the mind requiring causes, and the 'mind could not change, unless *interfered* with, therefore the *interfering* object is *exterior* to the mind□.[dxciii] On similar grounds, Shepherd holds that □*continuous* existence is known by *inference*, not by *sensation'*. She later adds that □Those circumstances which go to prove that there must be truly *outward* causes, for particular sensations, prove them to be independent causes of those sensations.□[dxciv] Shepherd frequently returns to this line of argument in her refutation of idealism, so she is, in a limited sense at least, she endorses a form of transcendental idealism. So, Brown's remarks on Kant, and Kant's own transcendental idealism, are helpful in understanding Shepherd's reply to Berkeley.[dxcv] The difference between Shepherd□s account and that of her British counterparts is due, to a large extent, to her recognition that an analysis of causality should figure in a reply to Berkeley.[dxcvi]

It would appear then, that Shepherd's full response to Berkeley's subjective idealism is one that appeals to her theory of representation. Moreover, the systematic aspirations of Shepherd's philosophy are apparent once we extended our view beyond Shepherd's negative criticisms of Berkeley. Shepherd's systematic aspirations bear repeating. 'The analysis, therefore, of the operations of mind from infancy, throws light upon the knowledge we have of cause and effect; and the relation of cause and effect when fully known and established, affords the only method of proof in our power, for the knowledge of external existence.'[dxcvii] These prefatory remarks to the 1827 treatise indicate that the analysis of causality there is the basis for her other arguments concerning external existence. But it also becomes apparent to the reader that she intends to rest her various claims there about induction, dualism, external perception, final causes, miracles, morality, and so on, on her arguments concerning causality.

As we have already seen, Shepherd ties her views of mathematical and physical induction into her view of the causal relation when she argues that the former depend for their certainty on the latter. That is, mathematical and physical induction equally depend upon the truth of the proposition 'That , when objects are formed the same upon one occasion as another, their qualities, properties, and effects, will be similar.' For, whether in mathematics or in physics, the objects are formed from aggregates according to the axiom 'That like cause must have like effect.'[dxcviii] The law of causation forms the base on which mathematical certainty is built; the only difference in the case of other sciences derives from the difficulty in tracing the original formations of the objects without impugning the causal axiom.[dxcix] A similar sort of appeal to the role of the causal relation is typical of many of her arguments. This is not really surprising, once she makes it clear that she takes causal reasoning is central to just about anything that could deserve to be called 'knowledge'. Shepherd makes no bones about her view of the importance of the causal axiom. 'The faculty of abstraction' she writes 'is truly the origin of all science'.[dc] It is through abstraction of the parts of representations that we can consider qualities separately, and are thereby led to knowledge of the causal axiom. She says that of mathematics that 'THE

DOCTRINE OF CAUSATION IS UNDERSTOOD BY SCHOLARS AS THE BASE ON WHICH THE TRUTH OF EVERY THEOREM IS SURELY BUILT'[dci].

Shepherd makes dependence on causality a very explicit part of her arguments for external existence. The foundational role of the causal axiom supplies the basis for inference to external existence. Her arguments, therefore, generalize not only to the physical sciences, but to everything in creation, which is itself causally determined. Indeed, 'to understand God aright, he cannot work a contradiction; he cannot occasion the same objects without any alteration amidst them supposed to produce dissimilar effects.'[dcii] Indeed, if God created a deterministic world, then our knowledge of such a world would be consistent with the causal axiom. As for miracles, Shepherd reminds us that the key to understanding their possibility is in the proposition that 'All laws of nature are comprehended in one universal law, that similar qualities being in union, there will arise similar results'.[dciii] A miracle is just an apparent deviation from nature's course as we understand it. No miracle could actually violate the causal law or nature's laws -- a miracle is merely 'an exception to nature's apparent course'.[dciv]

Shepherd's continual return to the causal principle seems very deliberate, and is strongly suggestive of systematic motivations. Several of her shorter essays develop specific arguments about the nature of representation that show how her analysis of the inferential basis for knowledge is consistent with observations of science. For example, the sense organs, she explains, are known by our inference to their causal role in bringing about effects of which we are conscious.[dcv] Indeed, all knowledge, no matter how bodily it may seem, turns on the causal axiom. Thus, sensations of moral and aesthetic worth depend in some sense on the brain and nervous system, but they also depend on thinking minds as causes for the sensations themselves.[dcvi] Not surprisingly, when it comes to the question of final causes, the analysis also turns to causation. 'To be a final cause' Shepherd writes, 'is to perceive a future possible quality'.[dcvii] A final cause, then, is a perceived mental quality -- not one that is immediately sensible, but one that is discernible in and united with the action of the brain.[dcviii] When there is evidence for design, there is also evidence for the action of efficient cause equal to bringing about the contrivance, which we reason to be of a like kind with the mental capacity for action. This analysis forms the basis for an argument by analogy for the existence of a Deity -- if not a fully demonstrative proof, Shepherd claims.

Apart from philosophers on the Continent, Shepherd and her circle were among those in Britain most inclined to take the challenges in Berkeley and Hume seriously. Brown and Shepherd are among the first to perceive that an answer to empiricist scepticism would have to probe the underlying account of causality and its connection to representation in theories of Locke, Berkeley and Hume. In this sense, Shepherd is undoubtedly deeply motivated to respond to the Scottish reception of Berkeley and Hume in figures such as Reid, Stewart, and Brown. But Shepherd is alone among them in developing a theory of ideas based on reason and the *a priori* -- an approach that is virtually unknown in the Scottish philosophy of her day. Like Mill, Ricardo, and others, Shepherd was probably involved with and influenced by the second wave of interest in Kant in England. The theoretical work of those connected with this second wave suggests that they looked to Kant for ideas on the second order discipline of philosophy of science. As we saw, Kant's philosophical foundation for natural science is motivated by two kinds of epistemic constraints; i) constraints on empirical knowledge from the *a priori* elements that understanding prescribes in representation and, ii) reason's drive to ascribe unity to nature. Shepherd takes both sorts of epistemic constraints quite seriously, and may have been directly or indirectly influenced by the second wave of Kant studies. Indeed, several of the political economists in Shepherd's circle appear to have been guided by Kantian methodological considerations in developing their 'scientific' theories. Debate and discussions of the 'scientific' character of political economy no doubt contributed to the development of ideas in this direction.

After Hume, the need to develop clearer ideas on the scientific method was pressing. But discussions of the sciences in Shepherd's day were often imbued with controversial value judgements and other confusions. For example, it was not always clear where facts and values entered into accounts. Malthus's theory of population, for instance, drew a connection between a family's level of wealth and its number of children. Malthus rested much of the responsibility for a family's wealth on the parents' decision of how many children to bring into the world. In a sense, it seemed that the poor, the sick, and the hungry had brought about their own misery through lack of good judgement. This analysis became the basis for a controversial campaign against public assistance that culminated in the 1836 Poor Law Reform. The subjectivism of these 'value-added' speculations of early political economy becomes even more apparent as the less scientific-minded theoreticians develop the basic framework of nineteenth century political economy. John Hill Burton's description of the 'theology of political economy' provides a good example of a value-ladened interpretation of political economy that would be palatable to the religious.

With an evident sense of satisfaction, Hill Burton reflects on the emergence of a new and enlightened understanding of the human race in political economy. According to Hill Burton, it is an understanding through which 'the natural passion of man to increase his acquisitions' has 'been made subservient to a principle of union' based on human interdependence. 'Our legislature has, after long conflict' he writes, 'done homage to the presence of this influence, in free trade...'[dcix] Indeed, political economics has exposed the 'causes and temptations of offences' in the 'traditional community of wickedness' has led to new insights about the true 'connection of nations with each' and the 'sympathy and communion' between individuals -- in effect, to a new theology:[dcx]

> Every new day, with its new facts discovered and laws explained, tends to show more clearly to us the intimate dependence of the members of the whole human family upon each other; and within the past few years, as much has been developed about this interesting law of the world's nature as might supply a Paley with materials for a new Natural Theology -- showing how the Deity has thus cared for the preservation, the happiness, and the indefinite improvement of the race whom he sent to people and command the earth.[dcxi]

Hill further notes that where previously, it was held to be necessary to trample upon others in the pursuit of prosperity, 'the gradual development of our knowledge of the economy of the human race, has tended to dispossess us of our unamiable and cruel philosophy...'[dcxii] Hill Burton's remarks reveal the close connection in the minds of nineteenth century political economists between the search for true causes, theology, and political economy. It was a short step from discussions of theism to political economy to the *theology of political economy*. Where one subject began and the other ended was a matter of some subtlety, a matter that would only become clearer as ideas on the scientific method became more precise. Indeed, some today still find the demarcation between science and non-science to be fuzzy in the field of political economy.

According to John Hick's in his *Causality in Economics*, the study of causation is as fundamental to a science of economics as it is to any science, since 'economic problems are problems of change, of growth and retrogression, and of fluctuation.'[dcxiii] It is vexing, then, that experiments in economics have to be 'static', 'since they have to assume that it does not matter at what date an experiment is performed.'[dcxiv] The temptation in economics, however, a temptation which can be readily traced to Ricardo's 'pure economic theory' approach, is to ignore temporal and concrete elements that ought to be considered relevant in any adequate 'scientific' investigation into causal relations. Sounding a bit like Hume, Hicks reflects on the problems of analysing change:

> The extent to which these [problems of change] can be reduced into scientific terms is rather

> limited; for at every stage in an economic process new things are happening, things which have not happened before --at the most they are rather like what has happened before. We need a theory that will help us with these problems; but it is impossible to believe that it can ever be a complete theory. It is bound, by its nature, to be fragmentary....As economics pushes on beyond 'statics', it becomes less like science, and more like history.'[dcxv]

As Hicks warns, left unchecked, the tendency to abstraction and idealization in economic method compromises the scientific character of its analysis, including probabilistic analysis. The dangers in probabilistic analysis, for example, may involve drawing from small sample sizes or making unjustified assumptions about randomness.

> Thus it is not at all sensible to take a small number of observations (sometimes no more than a dozen observations) and to use the rules of probability theory to deduce from them a 'significant' general law. For we are assuming, if we do so, that the variations from one to another of the observations are random, so that if we had a larger sample (as we do not) they would by some averaging tend to disappear.[dcxvi]

Others have gone as far as to claim that economics is no better than pseudo-science. They argue that there is a lack of fit between data and theory in political economy -- suggesting that economics has not in fact met the methodological and empirical standards of logical consistency, correspondence with observation, explanatory comprehensiveness, and theoretical unity required to make it scientific. In response to these charges, social scientists sometimes point to the difficulty in carrying out empirical research in the social sciences or to practical results as a measure of theoretical success.[dcxvii] Apologetics, of course, can serve as no excuse when it comes to empirical theories. Nor can the creation and dissemination of information about the practical effectiveness of a social theory or paradigm by governments, media, or social scientists themselves be regarding as an objective measure of a theory's success. Thus, even today, many convincingly argue that there is no genuine scientific method underlying economics. The problem is the same as it was in the days of classical economics, and is methodological at base. As Kant, Mill, Ricardo and Shepherd saw, it concerns the question of whether political economy is able to identify causal relations and genuine subsumptive laws according to accepted standards of genuine science.

Chapter 5: The *Camera Obscura* and the Difference Engine

5.1 Empiricism and the *Camera Obscura*

Mary Shepherd was not a scientist, though she took a keen interest in the progress of science. According to her daughter, she 'liked to pick up from such friends as Mrs Somerville, all possible beauties and curiosities in scientific results'.[dcxviii] It is not altogether surprising then, to find Shepherd appealing to scientific metaphors and devices to explain her philosophical views. She draws, for example, on the metaphor of the *camera obscura* to describe how the mind represents the external world. She also sees a parallel between the inference-drawing capacities of her friend Charles Babbage's 'curiosities of manufacture' and her own view of the mind's activity in representation. Shepherd appeals to other scientific metaphors as well, including an analogy to algebraic signs, in order to illustrate her account of our representation of exterior objects. On the face of it, such enthusiasm for science would seem to conflict with worries about atheism. However, like other members of her social group, Shepherd anticipates an underlying harmony between science, society, and religion. It is thus with an optimistic outlook that she appeals to scientific metaphors to assist the imagination with abstract epistemological and methodological points. In this Chapter, we will consider some of these metaphors, as part of an effort to elaborate and defend an interpretation of Shepherd's epistemology.

Shepherd's epistemology diverges from standard empiricist accounts of our perception of external existence. She agrees with Berkeley, for instance, that there are serious problems with the primary/ secondary quality doctrine. Specifically, her charge is that the account of how we acquire knowledge of primary qualities is at base incoherent. Strictly speaking, Shepherd reasons, primary qualities cannot be sensations in the mind, since they arise from the '*unperceived* qualities of exterior objects'.[dcxix] But how can such '*perceptions* of extension, figure, solidity, motion, hardness, and softness' be '*unperceived*' and 'totally *unlike*' sensation, she wonders.

> It is the philosophy of these authors, that the primary qualities of bodies are objects immediately perceived to be *exterior* to the mind, whose essences also may distinctly be *conceived* of...These *exterior* qualities are, therefore, *perceived* NOT to be *sensible qualities*, but to be totally *unlike* them...Thus, the *perceptions* of extension, figure, solidity, motion, hardness, and softness, &c. *are* NOT *sensations of mind*...[dcxx]

There is then, a coherence problem, and it is an inescapable one. For, all ideas must be perceived as sensations before the mind, and no sensation before the mind could arise from an *unperceived* quality of an exterior object. Shepherd goes on to quip that □When such thoughts as these are still held as the doctrines of *common sense*, how shall there be future improvement in any department of philosophy?[dcxxi]

Shepherd further rejects attempts to forestall criticism through modifications to the primary qualities doctrine. Consider, for example, Shepherd's response to Thomas Reid, father of the common sense school and apologist for the primary qualities doctrine (and empiricism at large). Reid holds that immediate objective knowledge of space is possible through the perception of primary qualities. He tries to embellish the standard appeal to primary qualities by characterising 'extension, figure and motion, as instinctive simple conceptions of understood qualities of external matter'.[dcxxii]

> ...[Reid] truly thought the senses could suggest the conception of the nature of the real essential primary qualities of matter, without such sensations becoming sensations, whilst the understanding was satisfied it was legitimate to do so, because □instinct□ compelled

> the mind to such a conception, and resolved the notion into a □*primary law of human belief*,□ which could not be disputed without disputing a first principle.[dcxxiii]

Hence, what is still worse than the original appeal to the primary and secondary quality distinction, is the attempt to shore up the doctrine by appeal to *instinct* as an aid to the underlying mechanism. For this is tantamount to self-contradiction, insofar as it involves the denial that perception of primary qualities is immediate through sensation. Such an embellishment only compounds the original atrocity, namely, the assumption that immediate access to primary qualities provides grounds for knowledge of external existence. In any event, the underlying doctrine of perception is flawed in both cases, and so cannot provide an acceptable foundation for our knowledge of external existence.

Shepherd is in fact sympathetic to Berkeley's doubts about the coherence of the appeal to the primary and secondary quality distinction. With Berkeley, she rejects the description of the idea of extension as denoting a 'quality of an external object':

> There is here said to be, an intimate association between two *notions*, viz. those of *extension* and *colour*; whilst yet the word extension is said to express 'the *quality* of an external object,' instead of a *notion*; and as such must be incapable of associating as an '*idea*,' with the '*idea* of *colour*.' which is also said to be '*a sensation of the mind*.' The whole sentence to those who will examine it accurately, must appear to involve a contradiction.[dcxxiv]

In sum, it is a misconception, Shepherd thinks, to say that primary qualities are properties of external objects that are directly perceived or intuited by the mind. She says that the view implies the absurdity that *either* extension is *in* the mind with colour or that colour is *out there* with extension.[dcxxv] Shepherd thinks that this assumption is buried in Hume's own theory of human understanding. For, Hume, like other empiricists, holds the inconsistent position that we form ideas of primary qualities -- sensations of exterior objects that literally, are *unfelt.* 'Mr. Hume' she says, 'has recourse, whence it is, that colour, sound, &c. as well as extension and solidity; i.e., all our perceptions of primary and secondary qualities, are thought to exist unperceived, when yet a *perception* certainly cannot exist *unperceived*, nor a sensation *unfelt*.'[dcxxvi] Shepherd disagrees strongly with this analysis of perception and sense objects, and so dismisses Hume, Reid, and Stewart with a single stroke, claiming that they follow a mistaken line of argument regarding external perception and the objects of perception. The problem then, for the defenders of the primary qualities tradition, is that their view fails to supply a plausible and specific story about how representations can carry the marks of objectivity that reflect the structure of the external world. For this reason, Shepherd rejects all forms of the standard appeal to the primary and secondary quality distinction as a foundation for realism.

Although Shepherd rejects the foundation for representational realism elicited from the empiricist theory of ideas, she does nonetheless hope to provide a foundation for representational realism. This foundation is to be neither materialist nor idealist, however. Hence Shepherd argues against materialists such as John Fearn, and against idealists such as George Brekeley. The foundation for representational realism, Shepherd thinks, will require dualist metaphysics. Shepherd, for example, had two pieces published as part of an exchange with Fearn, whose materialst views she entirely rejects.[dcxxvii] This philosophical exchange can be traced back to an accusation of plagiarism made in 1817 by John Fearn against Dugald Stewart.[dcxxviii] This accusation concerns the view that visible line is merely the sensation of colour. In the letters through which we trace the exchange, it becomes apparent that Fearn sought to promote his own work by publicly involving Stewart's name in scandal. Stewart, who is at the end of a long and venerable career, declines to comment on Fearn's work. He rightly fails to take the accusation of plagiarism seriously, since doctrinal priority in this case might well be given to any number of writers on the subject of external perception. Fearn later repeats the charge of

plagiarism against Shepherd, who in turn, defends both herself and Stewart by citing an earlier, eighteenth century source for the view. In 1796, Shepherd reports, Mr. Crisp said 'that visible figure was only known by the mental perception of contrasting colours'[dcxxix]

Stewart had declined to comment on Fearn's philosophy, in part because he was trying to complete his own work, but also because Fearn's materialist doctrine was so severely at odds with his own view. Shepherd herself objects at some length to Fearn's claim that sensations are extended. For while Stewart, Fearn, and Shepherd all agree that visible line and figure are perceptions of colour, Fearn goes on to reason that if colour is nothing but sensation, then sensations must themselves be extended.[dcxxx] Fearn adds that anyone who maintains that perceptions are sensations is committed to the extended nature of sensation, and that he fails to see how Shepherd can be consistent in maintaining the distinction between ideal and real extension:

> ...her Ladyship, although she rationally admits that *external unperceived objects or causes*, and external *space* beyond them, have an extension *really spread out*, confidently, at the same time, insist that *all the seemingly-extended things, which we perceive*, and which we call heaven and earth, in as much as these things are nothing but sensations in our minds, are NOT REALLY spread out.[dcxxxi]

Shepherd's reply to this charge is that perception and unperceived causes are different things requiring different definitions. External extension, she says, is not itself an idea, but an unperceived cause, fitted 'to create or produce the idea of extension' and for the 'capacity for the admission of unperceived motion'. In contrast to this, ideal extension is 'a simple sensation of the mind relative to external extension'. Shepherd's strategy then, is to draw a fine line between the idealist and realist positions, maintaining both real and ideal extension, which she takes to be different things requiring different definitions. She sums up her position as follows:[dcxxxii]

> Thus I have said, 'Coloured extension is a compound sensation; the sense of motion is another; tangibility and extension are others; but their unperceived continually existing causes are independent of sensation, unperceived and unknown; and whilst their positive nature is unknown, yet their relative value among themselves is known to be equal to the relative variety of the ideas and sensations; i.e. to the effects they determine on the mind.[dcxxxiii]

Shepherd's principal claim then, is that ideal perceptions of extension are not to be confused with external causal agents, since they have distinct properties. For, 'the *idea* of extension will not produce in any other mind the idea of extension' nor will it 'admit of unperceived motion'. Ultimately, Shepherd concludes that 'each particular sensation must be the unextended quality of some kind of extension' whose real properties are known by inference.

> In short, the sensible qualities FORM the sensible objects; but it is a *reasoning* arising out of a perception of the relation of these qualities; -- of the different positions of colours in relation to motion; -- of the knowledge of the place where we are, &c. by which external continuous existences are proved; a reasoning which Bishop Berkeley uses in proof of the independent existence of separate minds, and which reasoning and which minds he does not think can belong to dreams and frenzies, &c.[dcxxxiv]

Thus, Shepherd rejects Fearn's view, which she claims implies the absurd view that there are actually extended things in the mind along with sensations of colour. Her own theory of colour vision maintains that there is both ideal and real extension. The latter is known, but only by means of inference from the former. Shepherd's view also stands in contrast to Berkeley's epistemology. Berkeley, for example, holds that 'visible distance' is merely ideal, since perceived

objects can be reduced to collections of immediately perceived sensations. Shepherd complains about this obstinately simple-minded view of representation, saying that 'Berkeley never affixed the names of objects to anything, but the combined sensible qualities which the organs of sense helped to form'. It is by means of this strategy, which discounts the possibility of a more complex form of representational realism, that Berkeley commits the unsuspecting reader to subjective idealism. In fact, Shepherd charges that Berkeley 'wrote his theory of vision to obviate an objection that might be made on the score of '*visible distance,'* in order to prove it to be a sensation of *mind only* suggested by tangibility, &c...'.[dcxxxv] As Shepherd points out, the view that sense object are complexes of sensations and relations is purposely discounted at the outset by Berkeley. His own argument against materialism, as well as his positive doctrine, is in fact founded on the assumption that sense objects are nothing more than immediately perceived collections of sensations:

> This he omitted purposely, in order to have nothing to do with the c*auses and objects which create sensations,* until he came to explain them after his own notions, as necessarily *active*, and therefore *spirit.* His method of incomplete definition, and naming only the combined sensible qualities the effects of things, when all men name them as united with the perceptions of the understanding, and the observations of experience, is the reason why his philosophy seems at once plausible, contradictory, and unanswerable.[dcxxxvi]

Hence, Shepherd's epistemology is unlike the received empiricist accounts, and also unlike materialist and idealist theories. Shepherd elaborates her own view with an explanation of how, contra Berkeley, the mind perceives changes internally, and yet knows that these perceptions correspond to changes in external things. The explanation is given by means of a metaphor that is telling with respect to Shepherd's own philosophical views. The metaphor in question is that of the *camera obscura.* Shepherd uses the *camera obscura* metaphor in 1832, when searching for an image to help make her abstract discussions more concrete. Early versions of the device had existed for centuries, but rapid technological advances in lens manufacture had significantly improved the capacity to represent outer scenes in 'dark rooms' by the 1830s. So at this point in time, the *camera obscura* would have been a device of considerable interest, especially to some of the scientists known to or connected with Shepherd's circle.

The full-size *camera obscura* is literally a dark room into which images from outside are projected. A popular device in the days before photography, the careful arrangement of mirrors and lenses afforded panoramic view of towns. As the mirrors of the are manipulated to change their position, they vary the panorama. The viewing room is left dark in order to enhance the contrast and brightness of the image under view.[dcxxxvii] As would be the case today, technological advances were then regarded with great interest as curiosities, but also with an eye to utility. Portraiture, for example, was often accomplished with the help of portable versions of the device. For scientists working to advance the field of chemistry, one goal was to discover a chemical process that could capture the image of the *camera obscura* on paper. Both Herschel and Brewster, for example, are well known to have contributed materially to related advances in chemistry and photography. For someone such as Shepherd, more inclined to philosophy than to science, the *camera obscura* would come to serve as a metaphor for understanding the relation between processes in the mind, representations, and the external world. The outside world is like the world reflected by the mirrors of the *camera obscura.* The mind, partly hidden and partly perceptible, is like the 'dark room' itself; while the images displayed on the surface in the *camera obscura* are like the representations before the mind in conscious perception.

Shepherd's use of the *camera obscura* as a metaphor for the mind has a special significance. For the *camera obscura*, as you will recall, was the psychologistic metaphor introduced by Villers in his *Philosophie de Kant* for the purpose of explaining Kant's transcendentalism.

Shepherd could easily have learned about the metaphor in Villers, Brown, or Drummond, but regardless of her source, she must have been aware of the discussion and criticism surrounding the metaphor.[dcxxxviii] And, as Wellek points out, both Villers' *camera obscura* example and his reading of Kant suffer from an excess of psychologism.[dcxxxix] Shepherd nevertheless makes appeal to the metaphor to describe her own view, bringing together the camera obscura, the element of animation, and the various perspectives of the animated, mutliple-mirrored, *camera obscura*:

> The mind in this scene is as the reflecting mirror in a *camera obscura*, were it imagined to be *consciously* observing its shifting images, knowing them to be changed by the influence of corresponding, though unlike, objects from without; and directing the succession of its changes, by its power of varying the position of the intervening instruments which connect the exterior changing objects with their responding changing representative.[dcxl]

As the use of the *camera obscura* metaphor makes apparent, Shepherd evidently intends to portray the mind as an active and important element in her epistemology. Indeed, Shepherd's main arguments against the received empiricist views, the ones that relate to her claims about representation, ultimately turn on her view of the mind and its activities in perception. That she placed such an emphasis on the nature of mind is evident from accounts given by her contemporaries and successors. Robert Blakey, for example, gives a sympathetic portrayal of Shepherd's view of the mind and perception in his *A History of the Philosophy of Mind*.[dcxli] Blakey devotes a considerable number of pages to Shepherd. Quite appropriately, he begins by locating the basis of her criticism of Hume. He reminds the reader that Hume had 'publicly promulgated the doctrine' that 'we had no idea of causation whatever; but only that of two events following on another.' 'The appearance of a cause always conveys the mind, by a *customary transition*, to the idea of the effect' so that 'We may define a cause to be an object *followed* by another'. But, as Shepherd points out, Hume's account of how we come to form such ideas is very vague. According to Hume, ideas such as those of cause and effect are products of a *'feigned imagination'.* That is, they are mere imaginings not susceptible to proof of existence. Hence, despite having presented a most obscure analysis of the mind's activity, ideas of cause and effect are attributes an imaginary status, and Hume succeeds in casting widespread and profound doubt on belief in external existence. As Blakey remarks, modified versions of Hume's doctrine were promoted by Reid, Stewart and Brown, so that Hume's view was 'very generally adopted by nearly all the Scottish metaphysicians.[dcxlii]

Shepherd proposes an alternative doctrine of perception and external existence that is linked to her account of causality and representation. Her analysis places emphasis on describing the 'manner and action of causation' as it is discovered in introspection. In particular, Shepherd holds that the causes of the general powers of sensation are not the same as those for particular sensations -- for these are in fact several distinct kinds of sensation. Hence, we are able to distinguish sensible qualities from ideas, and these from the sensation of the general powers of consciousness. In analysing sense objects, we discover two types of sensation mix together, and reason quickly proceeds to distinguish the various types of sensations. We then infer, using the causal principle, the properties of things in the external world. Moreover, since each particular sensation is always *felt* as an effect that *begins to be*, we are able to distinguish our general conscious awareness from particular ideas of sensation, leading us to discover the sensation of the 'self'. Hence we further discover the sensation of ourselves as continuing conscious capacities, and this forms the basis for personal identity.[dcxliii]

Given the history of the discussion surrounding the *camera obscura* metaphor, the fact that Shepherd makes use of the comparison is intriguing. In 1801, Villers had used the metaphor of the *camera obscura* to explain the sense of inference in Kant's transcendental philosophy.

Thomas Brown and other empiricists rejected the metaphor, charging that the *camera obscura* would never be able to draw inferences. Like Villers, Shepherd supposes that the example succeeds in illustrating how we come to recognise objective elements in cognition. Yet she is evidently influenced by the discussion of transcendentalism and empiricism surrounding the metaphor. Given the benefit of the empiricist critiques that followed the publication of Villers' book, Shepherd attempts to rescue the metaphor from its critics. She does so by supplementing Villers original example with an actual account of *how* the *camera obscura* is supposed to acquire objective knowledge. In Shepherd's example, the animate camera detects objectivity through its 'power of varying the position of the intervening instruments which connect the exterior changing objects with their responding changing representative'. Thus Shepherd takes up the transcendentalist's cause, supplementing the purely psychologistic reading of transcendentalism in Villers with a justification of sorts.

The details of Shepherd's view of the mind and its activities in cognition emerge through her discussion of colour vision. For example, Shepherd says that she agrees with the usual view that colour is a 'sensation in the mind', but also holds that ideas of colour and extension are intimately associated by the mind, and arise according to a mechanism unlike the one describe by the common sense realists. Like Condillac and Berkeley, Shepherd holds that empiricism must fall back on the sense of touch in order to explain extension. She writes that 'I conceive ideas of colour to be from habit immediately associated with those of touch and motion. Contrasting colours, yielding us, therefore, by means of their associations, the ideas of distance and tangible figure'.[dcxliv] Indeed, Shepherd's view of the relation between colour and extension is that '*conscious, coloured extension,* is as a *picture* in the mind, and must be associated there with ideas of position and distance, and direction, in relation to *motion*.' In understanding, '...the soul perceives the *picture* in which the coloured atmosphere appears, as well as the objects beyond it'. It then places these elements 'in proportion to its perception of the motion requisite to attain contact with them' by 'referring all the perceived qualities, which are *effects*, equally to all the unperceived qualities which are their *causes*; and which are equal in their mutual relations.'[dcxlv]

On Shepherd's alternative, we perceive sensations of sensible qualities, in addition to which we perceive sensations of ideas connected with exterior objects. In observing visible figure uniting colour and extension, we can conclude only that primary and secondary qualities 'are *conscious* exhibited *effects*; *sensations* formed by the *excitement of unknown causes*, on the sentient powers'. Indeed, for Shepherd, 'motion in this respect is also a sensation; distance likewise; every consciousness, every perception, every notice, is mental.'[dcxlvi] Thus, ideas such as the idea of visible figure, arise as sensations in the mind, and are known to represent objects by inference. Such ideas are distinct from other sensations of sensible qualities, but are mixed with them in our representations of external things:

> No, there are perceptions of sensible qualities; and perceptions of their relations by reasoning, yet both are but species of sensations. The perceptions of sense, neither immediately, nor mediately as signs of conceived qualities, can ever tell us of their positive nature when unfelt, whether they be primary or secondary. *The perceptions of reason*, will tell us, that there must necessarily be exterior objects, and that these must be as various as the sensations they create.[dcxlvii]

Shepherd's account then, links the possibility of knowledge of external objects to direct contact with exterior objects through tangibility and the associations between touch and colour vision. Like Berkeley, Shepherd argues that touch and sight are basic to visual perception. She also holds that tangibility is a distinct sensation, and so must be treated like 'coloured extension', i.e., as an ideal object with a real counterpart. Tangibility, presumably, is what gives rise to ideas of our sensations of the 'physical' or 'material'. Shepherd's view is that we use our own bodies as

a point of reference in detecting the position and motions of other bodies. We move around in our environment, as if from the centre of a circle towards its circumference, and so discover patterns of motion and colour. The conformity of our measurements with patterns repeatedly encountered in sensation leads us to *infer*, by means of the causal principle, the specific properties of space, time and matter. Hence, Shepherd rests her case for knowledge of external existence on sensation, inference and the causal principle.

Shepherd's view of perception then, is that both colour and patterns are seen by the mind and reflect a reality exterior to the mind and body. As such, neither colour nor pattern is a mere affection of the mind.[dcxlviii] Shepherd is able to maintain this view in part because she holds that there are distinct types of particular qualities of which we are conscious -- sensations of colour and sensations of patterns. Both exist as mental sensations that are felt as distinct effects or changes upon the various powers of sensation. Moreover, all such particular sensations are distinct from our sensation of general conscious awareness.[dcxlix] In determining what it perceives, the mind is able to distinguish all of these elements, and to distinguish patterns from colours and so on. As for specific knowledge of external objects, Shepherd cautions that on her view, only □proportional varieties of external objects may be known□ so that the □real essences of mind and matter are unknown to us□.[dcl] Moreover, the five senses alone cannot prove knowledge of external existence, they do so only by means of inference.[dcli] Nonetheless, as she elaborates on her account of mediate representation, it becomes clear that Shepherd intends to part ways with Berkeley. For, Shepherd invokes a more substantive epistemological analysis of mediate representation than can be found in her empiricist predecessors to explain the process of knowledge acquisition. Berkeley does not seriously consider such an account of mediate perception, and so his criticisms against representational realism do not extend directly to Shepherd's view. Shepherd holds, for example, that 'sensible qualities form the sensible objects; but it is a reasoning arising out of a perception of the relation of these qualities; -- of the different positions of colours in relation to motion; -- of the knowledge of the place where we are &c. by which external continuous existences are proved...□.[dclii] What Shepherd maintains, contra Berkeley and other empiricists, is that we discover the various objective components in analysis of our representations. For Shepherd, objective features of exterior things, such as primary qualities, are also discovered through reason. Thus, she denies that the objective components of complex objects that are encountered in their 'intimately mixed' form are also inseparable in analysis.

In the end, Shepherd's use of the *camera obscura* metaphor helps us to see how she intends to distinguish her view from her empiricist counterparts -- that is, from Fearn, Berkeley, and the common sense realists. Although Shepherd maintains that we *can* discover objective qualities such as 'outwardness', her view of perception does not fall on the side of Fearn's materialism or of common sense realism. Shepherd's *camera obscura* example instead places her on the side of transcendentalism.[dcliii] But when Shepherd uses the *camera obscura* example to argue against Fearn, she claims that 'the above arguments elicit the reason' for her definition of extension, and concludes that 'there is no inconsistency in extension holding unextended qualities of a higher nature than itself.'[dcliv] Fearn, of course, quite failed to see the transcendentalism in Shepherd's philosophy and her use of the *camera obscura* metaphor. As a result, he misconstrues her view. So the *Dictionary of National Biography's* description that Fearn 'was no transcendentalist', is therefore apt. Indeed, Fearn's failure to detect Shepherd's transcendentalism leads him to read her as half-scholastic and half-Berkelean, a peculiarity that he attributes to the influence of her earliest instructor, whom Fearn supposes to have inculcated in Shepherd a commitment to metaphysical dualism. While Fearn is correct in pointing out Shepherd's metaphysical dualism and her affinities to Berkeley, he is wrong in thinking that her argument makes a direct scholastic appeal to ontology to defend real extension. Moreover, in Shepherd's eyes, most direct realists are, philosophically, in no better shape than a Fearn or a Berkeley. For, as defenders of the primary qualities tradition, they are committed to an absurd

view of perception. Shepherd points out, for example, that Reid and Stewart hold that colour is a 'sensation in the mind' but that extension is 'a quality of an external object.'[dclv] Rejecting all of these empiricist alternatives, Shepherd appeals to the transcendentalist's metaphor of the *camera obscura* to describe the relation between processes in the mind, representations, and the external world.

Thus, the clue provided by the *camera obscura* metaphor is important has a wider significance for interpreting Shepherd's philosophy and her departure from empiricsm. For Shepherd, the account of sensible objects brings together sensible qualities, ideas of causes, and inferential processes in a way that endeavours to justify our claim to knowledge of unperceived exterior objects and their objectively real qualities, both of which derive from a world independent of the subject. The fact that our various sense perceptions converge on a single coherent account of the world is ultimately explained with reference to the marks of objectivity in knowledge and it is the marks of objectivity in sensible ideas that lead us to infer knowledge of □exterior objects□. But the marks of objectivity arise and are detected independently of the usual empiricist appeal to primary qualities. And although the usual physical mechanisms are presumed to underlie the physical perception of sensible qualities, it is not mechanical action itself, but inference that leads to knowledge of the real properties of objects.

5.2 The Difference Engine and 'Modified Berkeleian Theory'

It is evident that Shepherd objects to various empiricist arguments for realism. She makes it clear, for example, that psychological inclination alone is insufficient to explain how we detect primary qualities in external objects. Despite this and other objections to empiricism, Shepherd still appeals to sensation and experience as a basis for her defence of realism. Her use of the *camera obscura* metaphor shows us something of her view of how the mind is at work in representing the world -- extracting marks of objectivity from sensible patterns in representations, inferring from these patterns to objectively valid knowledge, and so on. Ultimately, Shepherd□s indirect realism rests on her specific claim that the causal axiom acts as a rule from which we infer that specific changes in sensible patterns are caused by external objects. But Shepherd's epistemology and metaphysics depends on other claims -- some of which have not yet been discussed in detail. One such dependency is the claim that we have a distinct awareness of a general self-conscious perception. Another is the claim that we are able to analyse the contents of representations in much the same way that we can analyse algebraic signs. Shepherd describes this view as a 'modified Berkeleian theory', important features of which are captured, she thinks, in the operation of Charles Babbage's Difference Engine [cf. Algebraic Engine and 1839]. In the end, as we shall she, Shepherd focuses her argument around the causal axiom, arguing for objective knowledge of external existence in a way that differs from Locke and his empiricist successors.

In fact, what Shepherd appears to advance is transcendental argument for realism that, in some respects at least, resembles Kant's refutation of idealism. There are, of course, some very substantial differences between the two arguments. For one thing, Shepherd rejects Kant's forms of intuition -- for reasons that we will consider more fully later on. Nonetheless, it is helpful to compare the two responses to Berkeley's idealism, since Shepherd's analysis seems to draw on similar argumentative strategies to those found in Kant. Whether or not Kant did influence the direction of Shepherd's argument, it is apparent that the emphasis on the distinct kinds perception associated with conscious awareness and the subjective and objective elements of particular representations must be considered to be an important part of her argument against Berkeley. In addition, it is interesting to note that Shepherd's refutation of idealism seems to involve an appeal to *a priori* conditions of representation. Given the evidence, it is no exaggeration to say that she takes inspiration from the Kantian strategy in her refutation of idealism.

To begin, consider Kant□s general line of argument against Berkeley□s idealism, which turns on his claim that □the existence of outer things is required for the possibility of a determinate consciousness of the self□.[dclvi] In other words, Kant□s view is that our self-conscious awareness depends on the consciousness of actual things in space. His point is that it would be impossible to have a unified conscious awareness of the self unless we also had determinate consciousness of a succession of effects due to actual, permanent existences outside of ourselves. Kant emphasises that the distinction between general self-conscious awareness and the awareness of particular ideas is the basis for a further distinction between inward and outward existence. However, by Kant□s own standards, this response to Berkeley is ineffectual unless it can also be shown that consciousness of things in space and time constitutes direct and trustworthy knowledge of actual outer things. For idealist doubts about the external world, Kant notes, call into question whether our inferences to outer existence are trustworthy:

> Idealism assumed that the only immediate experience is inner experience, and that from it we can only infer outer things □ and this, moreover, only in an untrustworthy manner, as in all cases where we are inferring from given effects to determinate causes. In this particular case, the cause of the representations, which we ascribe, perhaps falsely, to outer things, may lie in ourselves.[dclvii]

Thus, for Kant, the real burden of the refutation of idealism is placed upon the argument to show the trustworthiness of inferences from what is given in experience to the real features of outward things. Kant emphasises that this can only be achieved through a combination of transcendental idealism and empirical realism. His transcendental idealism holds that determinate experience is possible only in virtue of aesthetic sensibility through forms of intuition in space and in time. Kant argues that the succession of effects that we perceive is determined in a temporal order, and that time-determination presupposes the existence of the outer things that we perceive in space. Since time and space contribute formal *a priori* characteristics to our determinate representations of both our own existence and that of outer things, these formal characteristics lend immediacy and objectivity to our knowledge of outer things. So Kant□s view is that the formal characteristics of representations due to space and time are also objectively real features of the external world; hence the real features of things are □directly perceived□ and lie both *in us* and in *outer things*.[dclviii]

Similar to Kant, Shepherd's argument for external existence appeals to her view that such knowledge rests on our ability to distinguish *general self-conscious awareness* from other sensations. Shepherd argues that awareness of the use of the sense organs, awareness of particular sensible qualities, and a *general self-conscious awareness* are all presupposed in our representation of sense objects:

> The union of the three following things are required to form the proximate cause for that great effect, the *formation* and *combination* of those aggregates of sensible qualities usually called objects; namely, first, the unknown, unnamed circumstances in nature, which are unperceived by the senses; secondly, the organs of the sense, whose qualities mix with these; and thirdly, the living, conscious powers necessary to sensation in general.[dclix]

Shepherd's defence of external existence then, turns on our ability to form a distinct awareness of general self-conscious perception. This analysis plays a part in Shepherd's transcendentalism, and specifically, in her positive arguments against Berkeley's subjective idealism. Moreover, the distinction between general conscious awareness and particular sensations sheds significant light on the mystery of internal and external existence. Shepherd's own view is that knowledge of external existence depends on distinguishing various sensations from general conscious perception:

> Now I repeat there is one sense in which it may be said that objects are perceived immediately, as existing outwardly, by the senses. It is this; the conscious powers of understanding, and the senses, are blended together in man; we are analysing them, but in nature they are united as intimately as are the prismatic colours in one uniform mass of light. This being the case, they are acting in concert when any object affects the senses. Therefore the understanding knowing the simplicity of mental sensation, it follows, that the varieties of the causes, (which create varieties in the effects,) are instantly perceived and detected, and that immediately with the conscious use of the senses; whilst also the mind as immediately mixes that idea of which the understanding is aware; viz, that theses varieties, as complex objects, continue to exist unperceived and independant, when unnoticed by the senses.[dclx]

On Shepherd's view then, sensibility and understanding are mixed together in cognition just as the colours are mixed together in a uniform mass of light. In both cases, the parts can be considered separately; in the first instance through the action of the mind; in the other instance through the action of the prism. Hence, Shepherd takes it that analysis by reason enables us to distinguish general self conscious perception, sensations of ideas and sensible qualities in our representations, just as the prism distinguishes and separates the various colours that together form light.

According to Shepherd, having distinct consciousness of the varieties of causes, we are in a position to invoke the causal axiom, which acts as a rule governing our knowledge of objects. This aspect of Shepherd□s view, perhaps more than any other, distinguishes her from her empiricist counterparts. What Shepherd maintains, contra Hume and Locke, is that the application of the causal principle is either an innate □capacity for a latent comparison of ideas□ or □very soon learned□, so that infants and brutes alike attempt to avoid violations of the principle.[dclxi] As Shepherd explains, it is easily perceived □that if any particular quality were supposed to begin of itself, the following contradiction would arise, viz. that the beginning of existence, which is a quality of being, could belong to a being not yet in existence□.[dclxii] That is, if we try to imagine a dependent quality that begins to exist, but that does not at the same time exist as a dependent quality, we are led to contradict the principle that that nothing that begins its own existence could be a dependent quality. Her argument turns on the fact that we can only represent things according to principle that 'No dependent quality can begin its own existence.' Evidently then, it is impossible to coherently think our representations of sense objects in a way that violates the causal principle. Thus, for Shepherd, the causal principle is a *necessary* and *universal* condition of determinate representation. Moreover, since ideas of causes arise directly in the mind in the act of representation, and are included in representations 'even when the organs of sense are shut', the causal principle governs representation in a rule-like way quite independently of any particular experiences. Given this analysis, it is worth reflecting on the fact that, for Shepherd, the causal principle is known *a priori* and serves as a criterion of truth by means of a rule-like application.

The appeal to *a priori* causal axiom should not obscure the fact that there are major and important differences between Shepherd's and Kant's epistemologies. Most importantly, Kant's argument against Berkeley is based on his demonstration that objects of experience must be given to us in space and time, so that the foundation for his refutation of idealism lies in the arguments for space and time in the Transcendental Aesthetic. For Shepherd does not endorse the Kantian view of space and time. What she holds is that we must *infer* that the □kinds and degrees□ of sensations present to the mind □relate to outward continually existing objects□, which can then be □compared in their bearings to each other□. The causal axiom forms the basis the inference to external existence and to knowledge of the real and measurable properties of space, time, and matter. The inference is in the first instance possible because we

have the capacity to distinguish, as distinct sensations in the mind, particular sensible ideas, ideas of causes, and general conscious awareness. Yet it also depends on our having general ideas of causes included in representations in such a way as to supply a rule from which we infer that exterior, independent and continuing existences are causes of invariable sequences in sensation. Moreover, it is the conformity of our measurements with patterns repeatedly encountered in sensation leads us to infer the reality of specific properties of space, time, and matter. Such inferences are taken to be meaningful indications of objective knowledge that is not directly accessible in sensation by means of analysis.[dclxiii]

Shepherd then, rejects Kant's view that space and time are forms of intuition. Her specific objection is the typical one of her day, namely, that Kant's forms of intuition make space and time thoroughly subjective. 'Kant imagines time and space to be only modes of the mind, which is mistaking the *causes* which determine a mode of the mind with the effect, viz. the mode of the mind.'[dclxiv] She argues, for example, that □the existence of time, like every other existence in nature, is perceived by some quality it determines to the mind, but has not its whole existence merely in that individual perception.□[dclxv] Similarly, space is a sensation that originates in us as a mode of the mind or sensible quality, although sensation alone does not lead to immediate knowledge of the properties of space or matter. In other words, Shepherd thinks, along with most of the early commentators on his thought, that Kant turns space and time, which are caused by external things, inward, and reduces them to something purely subjective in claiming that they are features of the mind. Shepherd does not accept that Kant's *a priorism* about intuition leads to objective knowledge of sensibility. She may perhaps be frustrated by Kant's vagueness of the account of how sensation figures in sensibility, just as she was frustrated by Hume's critique of causality based on a vague account of 'feigned imagination'. Her own view, it will be recalled, assumes the possibility of discerning patterns in sense data, but replaces the forms of intuition with association and inference, so that her account of vision is based on our linking perceptions of colour, motion and touch, and on inferring the visual pattern.[dclxvi] Unlike Kant, Shepherd is explicit and up-front about what her assumption of empirical realism entails, and she unambiguously claims that space and time more than 'mere modes' of the mind.

Shepherd has good reasons for rejecting Kant's view of space and time as forms of intuition. One reason is that the emphasis on forms of intuition would threaten to displace the central role given to the causal axiom in Shepherd's epistemology. Her positive account of objective knowledge of external existence attempts to bridge the gap between sensible perception and external objects by appeal to the causal axiom, and its role in helping us to distinguish objective patterns from sensible qualities and general conscious awareness. What is most important for our purposes is to note that Shepherd, like Kant, bases one of her arguments for our knowledge of external existence on an appeal to the distinction between general conscious awareness and particular sensations. Still more significant is the fact that Shepherd's argument is profitably illuminated by Kant's refutation of idealism. The obvious and important difference that must always be kept in view, however, is that Kant's argument, but not Shepherd's, is based on an appeal to forms of intuition that govern perception of space and time. Indeed, in arguing against Berkeley, Kant's forms of space and time stand in a role that Shepherd seems to reserve for the causal relation. Shepherd may be too quick to dismiss Kant's view, but in any case, she has an alternative view of mind on which to base an analysis of our perceptions of objective spatial and temporal relations.

Despite their differences, it helps to see that Shepherd's strategy in refuting Berkeley bears resemblance to Kant. The argument for realism seems to hinge, in both cases, on appeals to the *a priori* conditions of representation and on our distinct awareness of particular sensations and general self-conscious awareness -- strategies that we first see adopted by Kant in his refutation of idealism. Kant thought that his argument was able to show how transcendental idealism leads directly to empirical realism.[dclxvii] Transcendental realism, the empiricist view that objects of

sense given in outer appearance exist independently of our *a priori* forms of intuition, leads directly to empirical idealism. That is, transcendental realism leads to uncertainties about whether representations of outer things correspond to things outside of us.[dclxviii] Shepherd is not tempted by the transcendental realism of her empiricist counterparts, although her view of sense objects cannot strictly be described as transcendental idealism in Kant's sense either. For Shepherd has rejected a fundamental aspect of Kant's argument, namely, that Kant□s doctrine that space and time are mere forms of intuition. If there is just one way to construe transcendental idealism, that is, if transcendental idealism is just the Kantian view that outer appearances are represented through immediate intuition in space and time, then Shepherd is *not* a transcendental idealist. However, as Henry Allison notes, transcendental idealism can be more generally understood as the claim that there exist conditions that are known *a priori* and that govern representation. Since Shepherd's view is that knowledge of external existence rests on a causal axiom that is known *a priori,* Shepherd appears to accept something like Kant's 'weaker' doctrine of transcendental idealism.[dclxix] However, if we take transcendental idealism in the broader sense to include a weak version of the transcendentalist doctrine, it is clear that Shepherd's analysis does fall under the rubric of transcendental idealism. As Henry Allison has argued, Kant's broader thesis of transcendental idealism can be viewed as an □exclusive and exhaustive metaphilosophical alternative□ to transcendental realism.[dclxx]

Why then, does Shepherd think, with the transcendentalists, and contra Brown and her other common sense counterparts, that complex objects, reasoning according to the *a priori* causal axiom, and inference must be attributed to the mind in order to account for meaningful perception? In other words, why does Shepherd attribute the power of objective perception to the *camera obscura*? Brown, for example, explicitly rejected both the *camera obscura* metaphor and the transcendentalist strategy, on the grounds that it would be impossible to isolate the subjective and objective elements in subjective perception, since they never exist apart. According to Brown, 'We own the subjectivity of our perceptions; but we are convinced of the impossibility of analyzing them into objective and subjective elements; since to us, by the laws of our nature, these elements must ever coexist.'[dclxxi] Although Shepherd concedes that the senses and understanding 'are acting in concert when any object affects the senses', she holds that 'the understanding knowing the simplicity of mental sensation' can distinguish 'the varieties of the causes' and thus discover the subjective and objective elements in representation.[dclxxii]

As with other transcendentalist accounts, Shepherd's theory of knowledge acquisition places emphasis on reason and its role in helping us to detect objectivity. From representation we *infer* objective marks, using the causal principle, that sense objects cannot exist as □determinate causes□ independent of us, and that there exist continuous, external existences that act as causes. Shepherd's view further differs from empiricist views in the way that knowledge of sense objects depends on having ideas of causes mixed with other sensations in the very act of representation. This 'mixing' is associated with ideas of mechanical operations on the senses. For □in the general conscious perception of sensible qualities are included the knowledge that the organs of sense are used, as mechanical instruments acted upon by certain causes, and the IDEAS of these causes.□ [dclxxiii] Under these conditions the mind □immediately mixes□ together with the representation, the idea of an unperceived, independent, externally existing cause. The crucial thing, and the thing that bears emphasis, is that Shepherd holds that once represented, reason can detect that the object is a complex in which ideas, such as the idea of cause, are somehow already included. Ideas of particular causes of sensible qualities are included in representation so that we know that the □*distinct* and *different* actions of the brain...must be *synchronous* with whatever other powers are also necessary for that result□.[dclxxiv] It is a transcendental inference then, to the powers of mind that mix together sensations of ideas and sensations of sensible qualities.

Shepherd□s view here departs from competing empiricist accounts in an important respect.

For, it makes appeal to the fact that sensibility and understanding always act in unison in the brain in the very act of concept formation. This differs from the standard empiricist line that the operations of the understanding are introduced only *after* sense objects arise (as mere collections of sensible impressions in the mind). This point is crucial to Shepherd□s rejection of aspects of Locke, Berkeley and Hume's empiricist theories of ideas. It is this part of her argument that shows how representation of external existence depends on the *mediate perception* of objective features of objects -- features that are known by means of the *a priori* causal principle. Hence, something other than sensible qualities is allowed as basic and immediate to the representation of sense objects.

With the emphasis on *reason and mediate perception* in mind, we are in a position to appreciate the full significance of Shepherd's view that representations are complex objects mixing together sensations of sensible qualities and ideas. Given that complex objects have subjective and objective features, the mind has something to work on -- something to analyse into subjective and objective elements, and presumably, something that would count as an objective basis for causal inferences to external existence. Indeed, it is the combination of reason's activity and mediate perception that leads to Shepherd's fuller account of our knowledge of the external world. For, it is a discovery of *reason* that explains the basis for our initial detection of variety in particular sensible ideas. For example, we reason that sensation does not give rise to □the *variety* of its [the mind□s] own perceptions□ and that □therefore there must be *variety* without it□. That is, the □*various* existences must be ready in order to be perceived, and that these must lie under *various positions in relation to each other*, as well as to the mind.□ [dclxxv] As Shepherd writes, we notice □the regular reply of the organs of the senses to the irregular calls made upon them□. This, in turn, leads to the inference, in association with the sense of 'motion from point to point' to particular ideas of resistance and extension, i.e., to ideas of body.

> ...for the *mind* perceiving, upon each irregular application to some *sorts* of *beings,* or *qualities,* or *ideas,* which it may call the organs of sense if it *please,* that they regularly reply to that application, justly concludes them to exist when unnoticed, in order to be capable of this readiness to reply. Those objects, also, which do thus reply, yield to the sense of motion from point to point, an idea of resistance and extension in particular; and so are regarded as body; that is, as essences different from the mind, or the powers of sensation in general; but continually existing objects, or qualities, which yield ideas of extension, are not *ideas*, but *continued* existences called bodies.[dclxxvi]

To elaborate this account, Shepherd argues that the variety detected in sensible ideas and the causal principle enables us to infer the existence of continuous, external and independent objects.[dclxxvii] She writes, □*continuous* existence is known by *inference*, not by *sensation*; for every sensation passes away, and another is created □ but none of these, in its turn, could □begin its own existence;□ therefore they are but changes upon the existences which are already in being □ they are effects requiring causes.[dclxxviii] But as each mind could not change, unless *interfered* with, therefore the *interfering* object is *exterior* to the mind□.[dclxxix] She later adds that □Those circumstances which go to prove that there must be truly *outward* causes, for particular sensations, prove them to be independent causes of those sensations.□[dclxxx]

Shepherd's view is further illuminated by her claim that the meaningful determination of sense objects under names requires that her account be true. In this respect, Shepherd's interest in Charles Babbage's Difference Engine may shed some light on how her alternative theory of representation to cut against the empiricist alternative. Shepherd was in fact very well acquainted with Charles Babbage and his intellectual circle, and Babbage and his family are described as 'intimate friends'.[dclxxxi] An invitation to join Babbage for tea in his Devonshire Street Gazebo must have been a fascinating event. 'Mr. Babbage after tea, which was enlivened with many anectdotes and interesting descriptions, opened his cabinets, and in the most unaffected

way explained and illustrated their contents, many being specimens of curiosities in manufacture.'[dclxxxii] As with the *camera obscura* Shepherd took a philosophical interest in Babbage's Difference Engine.

Confidence in the mind's capacity to isolate objective features of representation must have drawn Shepherd's interest to the Difference Engine as an illustration of just such a capacity. In the 1820s and 30s, the Difference Engine was of great public interest, and was perhaps the first publicly funded technological research in Britain. Charles Babbage conceived of the engine, and then assembled it, after much labour and effort. The main innovation of the Difference Engine over existing mechanical calculators of the day was that it could be set to *draw inferences based on 'operating laws' or rules*, and so functions on the same basic principles of the modern day computer. Thus, if a given arithmetic rule is programmed into the machine, data is stored and processed and tables are generated, all according to the pattern set out in the initial law. Just as the Difference Engine calculates tables of data using rules, so too might human beings infer objective knowledge using rules. But Shepherd herself held out hope for an account of knowledge on which we infer objectivity from features that represent the external world. She explained her view of representation by analogy to the way in which algebraic signs represent outer things. Hence, perceived qualities are 'as *algebraic sign*s, by which we can compute and know the proportions of their qualities; as a *language*, which must be translated before it can explain the actions of nature.' [dclxxxiii] As such, reason plays an equal role to sensation in helping to show that qualities such as extension are discovered in perception.[dclxxxiv] The mind is like a computer that discovers the proportions in our representations.

And it seems that the Difference Engine would assist Shepherd in thinking about the mind's cognitive capacities. And Shepherd evidently grew increasingly interested in doing math as part of an effort to explore the analogy between the capacities of the Difference Engine and the mind. She writes Babbage from the countryside in 1836 to say that, 'We are <u>all</u> busy in algebra - I have begun to do it <u>regularly</u>'.'[dclxxxv] Shepherd soon writes again to ask about the extent of the capabilities of Babbage's machine. She asks whether 'your machine could work out the <u>sums</u> of the square numbers following the law as given [below]':

C. Babbage Esq.
With Lady Mary Shepherd's Compts

	49	- -	-	7
	240			
	v289	- -	-	17
diff 200	) 440			
	729	- -	-	27
2d diff 200	) 640			
	1369	- -	-	37
3d diff 200	) 840			
	2209	- -	-	47
4th diff 200	)1040			
	3249	- -	-	57
5th diff 200	)1240			
	4489	- -	-	67
6th diff 200	)1440			
	5929	- -	-	77
7th diff 200	)1640			
	7569	- -	-	87
8th diff 200	)1840			
	9409	- -	-	97

9^{th} diff 200)2040
11449 - - - 107

Dear Mr. Babbage

I want to know if your machine could work out the sums of the square numbers following the law as given above - viz - Every square number ending after the square of 7 in the units is = + 240 + 200 for every adl ten in the root - +49 - ad infinitum - I am very desirous to know, because I think it has by the knowledge of this law mixed with the observation that every square offers a corresponding change & regular order in the place of the tens, as -, 4, 8, 2, 0, with analogous laws in every other sqr number which has the sense of the American phrase being said, to know roots by inspection -

Yours always M Shepherd[dclxxxvi]

Shepherd's above letter to Babbage shows that she, unlike most of her contemporaries understood the rule-based principle on which the Difference Engine operates. Babbage's Difference Engine could draw out tables of numbers, operating according to a rule. Babbage projected that it would be useful in many fields, and especially where calculations are required to determine position, fields such as astronomy and navigation. Supposing that the mind is like a rule-based inference machine, a machine that can inspect and track its own application of rules, then it is like a *camera obscura* that is fitted with a Difference Engine inside. The combined metaphors offer an explanation of how the mind itself contributes objectivity and necessity in representing the external world. Mary Shepherd evidently found Babbage's 'calculating machine' to be of particular interest. She writes again in 1839, having perused some of Babbage's papers [cf. Algebraic Engine?]:

My dear Sir

I hope I do not betray an unpardonable vanity in requesting your acceptance of this little volume. I do assure you my motive for offering it to you is not merely that I may thereby chance to gain you a my convert by affording to you a ready reference, to some arguments which favour my notions of induction, causation, [etc] but chiefly as a small testimonial of the high gratification I felt in being permitted to peruse & observe upon your papers, & in being considered as in any degree qualified by you to apply the doctrine of this little volume to such abstruse enquiries, where to say truth they come into play more as I conceive than yourself as well as the generality of philosophers at present suppose. I have ventured to open the leaves in order to come on the passage - page 85 - (* see also pp. 77, 91) as an instance of that latent reasoning used in experiment by which it comes to be an example of all future, or other instances of a like kind & in which point of view an exact experiment in physics (supposed) becomes precisely analogous, to any example used in [for] proportions in mathematics or for results in algebra. -

I shall hope to see you tomorrow, when however we must be a little diverted from the grave to gay.

until then I remain
very sincerely yrs
MS -

Babbage's machine was of considerable interest to Shepherd, because it suggested a way of explaining how the causal principle might serve as an *a priori* rule governing cognition and

determining the law-like character of empirical generalisation. Shepherd, in short, may well have drawn inspiration from the Babbage's work as an example of how a mechanical machine might draw inferences from a rule to calculate complex tables of data inferred from the rule. By analogy, the brain might consciously reflect on the mind's contents, and reason apply rules for inferring objective elements (e.g., ideas of causes, patterns in sense data) contained in representations. Indeed, the Difference Engine might supply an answer to the empiricist doubts about how the *camera obscura* draws its inferences -- and an answer to why transcendentalism is a plausible philosophical answer to empiricist scepticism. Shepherd's letter suggests that she is interested in drawing on the Difference Engine as an example of the ability to draw inferences from inspection of complex patterns in introspection on the mind's contents. This example lends further proof of the role of reason in discovering necessity in knowledge. This then, is the beginning of a substantial philosophical answer to Brown and Drummond's ridiculing of the *camera obscura* -- and of the idea that the mind can draw inferences from patterns discovered in introspection and determine the objective features of representations.

Shepherd defends her theory of representation from such attacks with her analogy to algebraic signs. 'Now the causes of our ideas', she writes, 'may be considered as simple algebraic quantities', such that in the determination of causes on the mind, their effects may 'be considered as their *squares*'. Shepherd argues that the representation of sense objects is analogous to algebraic representation, where the values of abstract components that are mixed together in representations are not immediately known to the senses, but discovered through analysis and inference. Shepherd elaborates on the metaphor of algebraic signs to explain how representation leads to knowledge of continuous external existence. She writes that, '*all our ideas are as algebraic signs, which give evidence both of their own existence, and the quantities also signified; whose proportions among themselves are* known thereby, *as well as their positive values*.

It is in connection with this view that Shepherd is clearly excited at the prospect of Babbage's machine. She apparently sees not only its brilliance, but also its potential for understanding the mind and its process of acquiring knowledge of the external world. It is a point of great interest that she remarks at the end of her letter that the rule in question might typify the sense of the American expression ' to know roots by inspection'. [To whom is she referring?] Shepherd goes on to hint at what she might take to be the important connection between mathematics and her system of philosophy, showing that her interest extends beyond mathematics to philosophy of mathematics.[dclxxxvii] Indeed, she there mentions the connection between algebra, analogy, and concrete things, making a note of how the analogy expressed in algebraic quantities can be 'first translated into mathematical language' and '2dly applied to concrete things'. Her point is that in mathematics, algebraic signs stand for magnitudes that are not immediately known to the senses. These signs lead us, by analogy and inference, to knowledge of objective magnitude. Given that there was a general desire within her intellectual circle to bring science and rational principles more closely together, it is interesting to note that Shepherd attempts to elucidate her notions of representation and inference by analogy to algebraic signs.

Shepherd in fact goes so far as to explain her theory of representation by analogy to algebraic signs. 'Now the causes of our ideas', she writes, 'may be considered as simple algebraic quantities', such that in the determination of causes on the mind, their effects may 'be considered as their *squares*'.[dclxxxviii] She goes on to explain that 'The causes, therefore, of the ideas of sense, which determine their effects, viz. the ideas of sense upon the mind, must never be considered as holding similar definitions with those ideas of sense'.[dclxxxix] In metaphysics then, the representation of compound sense objects is analogous to algebraic representation, wherein components mixed together in representations are not immediately known to the senses, but discovered through analysis.

Further use of the analogy to algebraic signs illustrates the sense in which detecting the causal principle in compound objects leads us, by analogy and inference, to knowledge of objective features of external existence. Here Shepherd is clearly drawing on ideas in philosophy of mathematics as a means of elaborating her metaphysics. Shepherd□s draws on the example of algebraic signs in explaining how her theory of representation leads to knowledge of continuous external existence. As she explains, '*For all our ideas are as algebraic signs, which give evidence both of their own existence, and the quantities also signified; whose proportions among themselves are* known thereby, *as well as their positive values*.'[dcxc] In sum, the mind discovers that there are *a priori* objective features embedded in our representations. And, just as we can understand that an algebraic sign stands for a real magnitude indirectly linked to what is observed, we understand that features of our representations relate to objective features in the external world. Thus, it is through the assistance of objective marks in representation that the understanding draws legitimate inferences about the specific spatial and temporal properties of sense objects when properties discovered in appearance, or 'sentient existence', may also be supposed as manifest in the actual causal order of nature.

Hence, when Shepherd writes to Babbage of her interest in the analogy expressed by algebraic quantities through their □translation into mathematical language□ and □application to concrete things□, we can suppose that her interests in algebra and the Difference Engine are continuous with her interests in epistemology and metaphysics. This, in the end, is the reasoning that underlies Shepherd's 'modified Berkeleian theory', and through which she endeavours to propose a transcendentalism that can bridge the gap from empiricism to realism.

Chapter 6: On the Causes of University Reform

6.1 The New University and the *Via Media*

The issues surrounding religious persecution and freedom of conscience that we first saw in connection with mid-eighteenth century Edinburgh did not die out in nineteenth century Britain. What began in Edinburgh as a 'roasting of Scotch atheists' turned southward to Oxford and Cambridge, where there ensued much controversy over religious doctrine and curricular reform. There was growing support for the removal of exclusionary religious test and antiquated curriculum requirements, and prior experience with the issues put the Scots in a leadership position in the educational reform movement. Mary Shepherd and her circle of friends were particularly keen to ensure that the removal of religious tests figured centrally in university reform.

Change did not come easily. The original statutes of Britain's major universities dated to medieval times, and the curriculum goals and religious requirements, like the statutes themselves, were revered as combinations of tradition and truth. Innovations of various sorts were tried, particularly in Edinburgh, where there is evidence of revision to university statutes as early as 1709. To wit, the Town Council declared that the office of Professor of Divinity could not be held in conjunction with a ministerial charge, because the academic post held 'in conjunction with the ministeriall charge is too great a burden for one person'[dcxci]. Hence, it was resolved that 'the said office be supplyed in such way and manner as may tend most to the advancement of learning' and that 'the person to be elected shall have no ministeriall charge but shall dedicat himself to the said office allenarly'[dcxcii] Presumably, this particular innovation was undermined. As the letters written by Dugald Stewart and John Playfair to the Lord Provost, George Baird attest, there was a continuing concern over the problem of professors holding ministerial charges in 1805.

Elsewhere in Britain, proposals to reform higher education were similarly stonewalled. Richard Carlile's 1821 *Address to Men of Science*, written from prison, advocated the study of science to the exclusion of religion and metaphysics.[dcxciii] Specifically, Carlile proposed teaching the youth only science 'instead of torturing their minds with metaphysical and incomprehensible dogmas about religion.'[dcxciv] 'My present aim', he continues, 'is to lay down a sketch of what seems to me to be a more instructive and useful system of education.'[dcxcv] Carlile advised banning religious instruction. He recommended instead the classics, historical subjects, geography, Linnean classification, physiology, zoology, and the like. For, the 'study of Nature and her laws, alone forms any substantial faith or religion.' Indeed, physiology and zoology prove 'that the organization of the animal called man, is not more wonderful than that of every other animal and vegetable, nor is he of more importance in the scale of Nature.'[dcxcvi] Carlile ends with the even more shocking claims that 'Man has nothing but the dogmas of superstition in support of his future sensible existence' and that mankind exists 'to no other purpose, and by no other cause than every other animal and vegetable.'[dcxcvii] Evidently, Carlile's program of reform would have left almost everyone, from Liberal to Tory to the average citizen, aghast.

Despite Carlile's unsatisfactory manner of making pronouncements on the subject of religion and education (not the least of which was his circumstance of being jailed at the time), curricular recommendations quite similar to his were in fact adopted as founding principles of London University. Among the group that helped to establish London's University College were several of the Scots who had supported John Leslie and Richard Carlile throughout their troubles. Many were well known to Mary Shepherd, including James Mill, Henry Brougham, and Leonard Horner. This 'new university' placed emphasis on the science curriculum, 'with deliberate

exclusion of theological studies or religious affiliation'. Such reforms were controversial -- even at London -- where the new university and curriculum were being created with a relatively free hand, and curriculum reforms were tailored and packaged in appropriate and acceptable rhetoric. Thus, in July 1825, as Henry Brougham busied himself with fundraising for the university, he was lampooned in the act of selling shares in a Robert Cruikshank cartoon. Among the other Scots who were influential in bringing about the educational reforms at London were Leonard Horner and Joseph Hume. Horner, who is listed among the Shepherd's dinner guests, took up the administrative end of things. Having left a manufacturing business in Edinburgh, he went on to become Warden of the University of London. Horner, like the other Scots involved in the establishment of London University, would doubtless have supported its founding principles. When the university opened its doors in 1836, it was designed 'to supply the shortcomings of Oxford and Cambridge', offering 'higher education free of religious tests, a non-resident system that substantially reduced costs, with teaching organised upon professorial lines after the Scottish pattern.'[dcxcviii] Evidently, what all of these individuals interested in bringing about university reform shared in common was the goal of establishing an educational environment that would support a system for learning that was unfettered by religious tests, financial barriers, and persecutory politics.[dcxcix]

James Mill, one of the Scots involved with the London University reform, contributed to the conceptual end of things. True to his *a priori* and deductivist leanings, Mill conceived of a plan for university education founded on rational and consistent principles. Much of the intended educational reform was based on reorganising branches and sub-divisions of knowledge into a systematic classification, allowing for a well-ordered plan of study and for coherent advancement within each discipline. The end of the education of the individual was conceived entirely along utilitarian lines, and was to 'render the individual, as much as possible, an instrument of happiness, first to himself, and next to other beings.'[dcc] Not only was this vision of a new curriculum explicitly utilitarian, but it was entirely rationalist at base and abstract in tenor. As Mill's biographer remarks, ' the *a priori*, or deductive handling is here exclusively carried out. The author hardly ever cites an actual experience in education; far less has he a body of experience summed up in empirical laws, to confront and compare with the deductions from the theory of the human mind.'[dcci] [Mill's *On Education*] Mill, however, is abstract to the taste of Mary Shepherd, who ties her theory of representation directly to Mill's views on education. In her long essay against Berkeley she writes that 'Objects are reckoned independent of ourselves, because they appear like ourselves plus or minus the varieties of the qualities.' To this comment, which relates directly to perception and representation, is attached a footnote that reads, 'I find an unexpected coincidence of thought here with Mr. Mill in his pamphlet on Education.'[dccii] In the Mill footnote, as in other footnotes, Shepherd reveals her predilection for the abstract and axiomatic. Given the context of her day and the underlying issues with which her group was concerned, Shepherd's linking of an abstract epistemological point and Mill's pamphlet on education is telling with regard to her interests.[dcciii]

Other suggestions for reform in education that would prove more practical included those of James Pillans Jr, descendent of Mary Shepherd's tutor and Professor of Humanities at Edinburgh. In the 1830s, Pillans offered suggestions to Parliament on educational reforms that would indeed prove influential in Britain. [Pillans on educational reform] With such ambitious reforms in mind, and hopes to follow a new, democratic, and professional model for education, plans began to take shape in the minds of many Parliamentarians and philosophers. [Whately]

At this point, change was beginning to get a wider foothold. At Cambridge and Oxford, movements to encourage theological liberalism were initiated. In the 1820s, the early years of what came to be known as the Oxford movement, Whately supported the movement toward

theological liberalism at the university. In those days, the movement amounted to little more than an evangelical call to renew the spirit and vigour of the church in its traditional, ecumenical role. That said, according to Edward Bouverie Pusey, a significant factor in the origin of the Oxford movement can be traced back to John Keble's 1827 publication *The Christian Year*, a publication that dates the origins of the Oxford movement quite early. In this work, Keble addressed the doctrines related to the Holy Eucharist and Divine Presence. The book's poetry touched on and re-awakened interest in doctrines such as Apostolic Succession, Baptismal Regeneration, and the Holy Trinity.[dcciv] In the main, Keble's book was a call to spiritual re-awakening in the Church of England -- a Church that was increasingly criticised as devoid of genuine spiritual calling. The call, particularly in its Catholic elements, was controversial in many ways. For as the Catholic-Evangelical revival gained momentum, more sermons were preached on the role and duties of the clergy, and guidance in moving the church forward was increasingly sought through inspiration from the past. In particular, the Catholic Church was seen as a guide on subjects such as Church Authority, Episcopacy, and Apostolic Succession. The movement itself turned into a revival of High Church tradition, a revival that supported the cause of Catholic emancipation, and that involved figures such as Hugh James Rose, Charles Lloyd, John Henry Newman, Edward Bouverie Pusey, William Froude, William Palmer, Issac Williams and Frederick Oakeley. [Bouverie family]

It is interesting to note in connection Pusey's comments about *The Christian Year*, that several prominent figures of the Oxford movement, including Keble and Pusey, had connections to Scotland's Episcopal Church. Although interest in ritualistic and aesthetic aspect of the service was not emphasised in northern parts of Scotland, Catholic sympathies were shared in varying degrees in many parts of Scotland. In the north, Catholic interpretation was quite welcome. In south, with the exceptions of Edinburgh's St. Columba's and Jedburgh -- both of which were Tractarian in foundation -- 'The strong, Catholic teaching of Keble and Pusey was tactfully omitted.'[dccv] Alexander Forbes, who later became an influential Episcopal Bishop, came under the influence of Keble, Pusey, and Newman, while a student at Oxford, and this was likely an important connection between the Oxford movement and Scotland's Episcopal Church.[dccvi] In the end, the Anglican, Catholic, and Episcopal connections would lead to a doctrinal emphasis on the ancient Catholic traditions and dogmas, an emphasis that would ultimately lead to considerable schism at Oxford. For, the 'Tractarian' movement that ensued produced tracts that interpreted the Anglican doctrine as virtually identical with the doctrines of the Catholic Church. Where variation existed, the results were either inconsistent or unintelligible. Indeed, many of the central issues of the Tractarian movement were based in the theology of the Eucharist, which was central to both Catholicism and to traditional forms of Episcopacy. Thus, the interest in dogma began as part of an evangelical revival that looked to fundamental doctrines as a source of spiritual renewal. In 1828, Newman gave a sermon *On the Lord's Supper* in which he interpreted the distinction between the 'real presence' and its effects. At this stage, Newman is still conventionally Anglican, describing the Lord's Supper as a feast through which we become one with Christ -- except that it is only in a metaphorical sense that we gain in spiritual strength through the sacrament.[dccvii]

Whately's name arises often in connection with the early days of theological liberalism at Oxford. The political dealings that later emerged in connection with the 'Hampden controversy' and subsequent events would eventually turn him away from Oxford. In addition to Whately, other names that arise in connection with the Anglican revival at Oxford and the Hampden controversy include those of Copleston, Arnold, Davison and Hawkins. They formed a group that represented neither High nor Low Churchmen. Rather, they 'had become a new school, characterised by its spirit of moderation and comprehension', a school that came to be regarded as 'forerunners of the oxford liberals'.[dccviii] Because of their liberal politics, they supported the

Catholic-Evangelical revival, as a matter of principle, in its early days. Their emphasis as Christians was non-denominational and non-partisan. As a well-respected group of academics and intellectuals, their support for the revival angered the orthodox opponents of the movement. At this point, for principled reasons, Whately removed himself from the open controversy. For what had begun as a movement in support of theological liberalism was becoming transformed into a political war in which various parties engaged in destructive personal attacks against those involved.

Things really began to heat up at Oxford in connection with the controversy that came to be known as 'the Hamden controversy'. Renn Dickinson Hampden's name became known after he delivered his Bampton Lectures 'On the Scholastic Philosophy' in 1832. Blanco White, a friend of Richard Whately, and tutor to his children, is said to have assisted with the lectures, and perhaps to have contributed to their somewhat unorthodox flavour. [Hampden's Bampton Lectures 'On the Scholastic Philosophy' and 1832 controversy] But, as with Leslie's footnote, Hampden's lectures did not attract any notice when they were published in 1832. In fact, after the lectures, Hampden was made principal of St. Mary's Hall and later, in 1833, Professor of Moral Philosophy. In 1836, Hampden was further honoured when Lord Melbourne made him Regius Professor of Divinity. It was at this point, in part as a result of a backlash against Hampden's appointment, that the trouble began. The impetus for the backlash was jealousy over Hampden's appointment, but in the context of the Anglican revival underway at Oxford, the attack on Hampden soon turned to matters theological and political. The 'leading bigots', so it seemed, were offended by the new political liberality symbolised by Hampden and the Anglican Revival, and so found a means of lashing out against Hampden's 1836 appointment. That means was to light upon his earlier Bampton Lectures, and to claim that in these lectures, Hampden had 'so treated theological questions that, in this behalf, the University had no confidence in him.'[dccix]

This negative portrayal of Hampden's theology and motives is in no way consistent with the vast majority of reports on his character and intentions. He is described as someone who, 'with no definite intentions of innovating on the received doctrines of the Church' had 'taken a very difficult subject' and 'without all fathoming its depth and reach, and had got into a serious scrape in consequence.'[dccx] Following the lead of German theologians, Hampden had envisioned a large divide between dogma and Scriptural authority. His underlying intent was to elevate Scriptural authority, and he aimed to do so by qualify the authenticity of the various scriptural interpretations expressed in church dogmas that were major causes of dissent and division. In attempting this, Hampden is said to have unwittingly undermined the church and its authority to legitimate divine fact. Hampden, according to his critics, 'left nothing standing but the authority of the letter of Scripture. All else --right or wrong as it might be -- was "speculation," "human inference," "dogma."'[dccxi] Hampden was quick to offer explanations, but now the controversy began to unfold at an unmanageable pace. His worst 'offence' may well have been his self-defence by appeal to personal conviction. It was suggested that what Hampden had thereby reduced all but the letter of the Scripture to his own personal conviction and opinion. In the minds of the extreme conservatives, such an appeal to personal freedom of conscience was clearly insufficient. This controversy urged on the later stages of the Oxford movement -- the Tractarian debates over the correct interpretation of the Anglican dogmas, and eventually the break from the Anglican Church and adoption of Catholicism on the part of Tractarians such as Keble, Pusey and Newman.

Whately and his followers had supported Hampden through his crisis. Whately's own views on the Hampden controversy had all along strongly favoured the *via media* -- a moderate approach in both policy and practice. 'For when we differ from a man in any of his views, it is more

incumbent on us to allow him fair play, and to demand it in his favour.'[dccxii] This was the proper time and place for neutrality. At the same time, Whately expressed grave concerns over the ill effects of remaining neutral with regard to bigotry and persecution. In a letter to Dr. Tyler regarding the injustice of the proceedings at Oxford against Dr. Hampden's appointment as Regius Professor of Divinity, Whately writes,

> If whenever a party of furious bigots have gained a majority in favour of some extravagant or unjust measure, all who are not of that party should make it their rule to stand neuter till the violent passions had cooled, the result would plainly be that the most violent and irrational would be likely in each body to bear rule unresisted.[dccxiii]

Thus, bigotry must be fought, although the spirit of neutrality toward those whose views on Christianity differed from authoritative interpretations of doctrinal matters was also paramount. Whately, of course, was no sceptic on religious matters. Of his scholarly interest in theology, we know that he supported Paley's natural theology. But the religious thinker to whose thought he closely adhered was Butler.[dccxiv] Like Butler, Whately preferred historical analysis to proof and argument in support of the rationality of Scripture. He was content to leave metaphysical and doctrinal mysteries to personal contemplation. In the main, Whately worked to promote the sort of non-denominational approach to religious education that prevails in Western societies today. As one commentator explains, Butler's moderate and rational stance was an important ideal for Whatley in the face of the raging controversies of his day:

> This was partly because such divines as Whately felt intellectually stranded in the mid-nineteenth century cross-fire between, on the one side, the Tractarians and the Evangelicals, and, on the other, the 'Mythics' and 'Naturalists' (to us Whately's terminology), those German-inspired theologians who reduced the Scriptures to the level of parables, or who explained away miracles as natural phenomena. Paley was an eighteenth-century guide to a *via media* of reason and light, which led between routes either to infidelity or to irrational, although traditional, faith.[dccxv]

The spirit of compromise and tolerance so formed the essence of Whately that it seems to have been even more important to him than settling points by philosophical argumentation. Whately, it might be said, was a liberal in the sense of being opposed to extremes. He was essentially supportive of a liberal-tending status quo in the church, state and university. His moderate views are evident in a letter to Dr. Arnold, written on the subject of London University and other educational reforms. Whately expresses a strong preference for a non-denominational approach to Christian education in both the university and school systems. He emphasised the importance of Christian history as a component of the education of citizens of predominantly Christian countries, which is, he points out, the reverse of traditional practice. But, since such a reversal avoids the 'fierce and mutual persecution' of opposing parties, Whately approves the change, and he even suggest that, as a matter of policy, 'I should call for no signing of articles -- no profession of faith'.[dccxvi]

Other influential individuals expressed distaste for any form of secularism in the university and its curriculum, and for policies designed to improve accessibility to higher education. Newman, for example, gave voice to the views of many conservatives when he said that only religion could be the basis for a sound national university that could mould the student body together in 'one tone and one character'.[dccxvii] Newman's position was later summed up in his book entitled *The Idea of a University*, in which he argued against 'the so-called University, which dispensed with residence and tutorial superintendence and gave its degrees to any person who passed an examination in a wide range of subjects'. Specifically, Newman objected that such a university

would not be 'successful in training, moulding, enlarging the mind' or in sending out 'men fitted for their secular duties'.[dccxviii] As late as 1860, there are bitter cartoons that capture this sentiment, depicting the University of London as 'The Battle Field of Sciences and the Churches.'

Ultimately, Newman came to promote the very sort of the persecutory and confrontational approach to university politics that was inimical to Mary Shepherd and her circle. Having once been friends, Whately and Newman eventually parted ways over their theological and political differences at Oxford. In the end, theological liberalism had posed such a threat to conservative forces at Oxford, that what began as a move toward liberalism devolved into bitter political warfare, destroying old friendships:

> Newman and Whately had been friends, and from the latter the former admits that he had learnt many things. In later years Newman was in Dublin for some years as rector of the ill-fated Catholic University, and at the same time Whately was there as Protestant archbishop. Yet they never met to speak to one another even in the street.[dccxix]

Having initially welcomed the liberalism of Newman and others, Whately came to shun the excesses of Tractarians such as Newman. As Windle points out in *Who's Who of the Oxford Movement,* the title of Newman's last sermon as an Anglican clergyman acknowledge that the whole affair had led to 'The Parting of Friends'. That said, Whately himself is perhaps best remembered for advocating the *via media* -- a moderate, middle course between intolerance and indifference on religious and political matters. He opposed the Tractarian movement that followed the Hampden controversy, and which he suspected was merely a divisive movement 'to propagate a secret infidelity' to the Anglican Church.[dccxx] In a similar spirit, his friend Dr. Arnold wrote an *Edinburgh Review* article entitled 'The Oxford Malignants' decrying the vicious party politics engendered by the Tracts at Oxford.

Thus, many of Shepherd's friends were university, church, and government officials interested in institutional reform. Like other Scots affected by the discussion of theism and causality that ensued in the wake of Hume, many of these individuals would actively promote a more secular and democratic context for university education. For some, like Mill, Shepherd, Pillans, and Whately, the issues were explicitly grounded in principled foundations, and especially, in a respect for academic freedom. It is largely due to their efforts that there would be novel and controversial policies introduced at London, policies that would set a standard for freedom of conscience and free speech in the university. However, despite the example set at London, the requirement of religious tests and religious instruction in the more ancient universities remained unchanged for a long time to come. Issues around religion and university reform continued to simmer and boil in Britain, and theological controversies likewise persisted. Thus, the conceptual and political issues that first emerged at Edinburgh University, and that would later take hold at London and the Oxford, illustrate the continuity in the debate and discussion of issues around religion and academic freedom in Britain. The debate originated in Edinburgh with Hume, and it there drew the attention and interest of many of those who would take an interest in shaping the direction of Britain's universities.

6.2 Science, Technology, and Liberal Education

Shepherd took an interest in science and technology, and like other members of her circle, she hoped to find a harmony between faith, science and reason. She was deeply committed to the

idea that at some fundamental level there would be unity in knowledge, and so she was predisposed to explain away new data emerging from the physical sciences. With her commitment to unity, and her rationalist assumption that reason is the key to systematic unity in knowledge, she could justifiably uphold the right to freedom of conscience and expression. Indeed, Shepherd's approach to science, religion, and education, like her discussion of Hume, was based on a fundamental respect for the open exchange of ideas.

For Shepherd and her circle, interest in the sciences was not merely theoretical; it had practical dimensions as well. Members of the group developed strong views and attitudes towards progress and the social and ideological impact of science. In 1830, for example, Charles Babbage, wrote a book entitles *Decline of Science in England*, which seems to have inspired debate on the subject of progress and science within Shepherd's circle.[dccxxi] In any event, Whewell and Babbage entered a public debate on the subject, and debate is interesting insofar as it relates to attitudes towards science, technology, and industry in a society deliberating the future of science. Babbage, for example, criticised the aristocratic flavour and lack of professionalism in the Royal Society in his *Decline of Science in England.* To these criticisms, he added a general castigation of the government's lack of support for science.

William Whewell referred to Babbage as the 'leader of the 'Declinists', despite the fact that he himself questioned the value and legitimacy of the progress made in the sciences during the nineteenth century. In what would seem a ludicrous suggestion today, Whewell advocated that one hundred years be allowed to pass before introducing a particular new theory to the university curriculum. Ostensibly, this temporal lag was not proposed for the purpose of protecting religion from evidential challenges, but in order to give adequate opportunity for a proper assessment of the merits or demerits of each new physical theory! At the same time, Whewell presented himself as a supporter of curricular change, encouraging the study of the natural sciences. His suggested reforms were much more conservative than those introduced at London. However, this conservatism may in fact have been key to his success in opening the door to change at Cambridge. For, in this instance, achieving any modification of the medieval statutes was a great innovation in its own right -- for it was daring to attempt revision of the statutes in the first place.

Whewell's contributions to educational reform at Cambridge were generally regarded as positive. Controversies there were mild in comparison with the bitterness and animosity that ensued at Oxford. As Master of Trinity, Whewell oversaw modest revisions of the statutes, although his real interest lay in outlining the direction of liberal education. Whewell's position was that the curriculum at Cambridge should not include recent works, even ones of great scientific value, 'until some time has elapsed, and the mathematical world has given them their sanction.'[dccxxii] Whewell's motive might well have been that of avoiding the embarrassment of teaching patently false doctrines -- but it also suggests that he felt that a firm foundations in the classics was necessary -- perhaps to ensure a theologically sound footing for young students. Whewell seems to have had theologically conservative motives in his reservations about science. He may well have sanctioned the idea of open inquiry, but he was often strategic in his attitude toward theories.[dccxxiii]

It took many years to bring about curricular change at Cambridge, but Whewell eventually published a book entitled *Of a Liberal Education* in which he explained and summarised his views. Whewell's most important recommendations for curricular change involved the encouragement of the study of the natural sciences, and the requirement that, in a limited sense, the study of mathematics should precede and be prerequisite to the former. These suggestions, although modest in some senses, did have an impact on reforms at Cambridge.

Interestingly, to the rigidly conservative, Whewell's modest proposals were seen as radical. Whewell's suggested reforms were criticised as having over-emphasised the importance of mathematics. Moreover, his neglect of the study of classical subjects such as geography, modern language, and aesthetics was seen as a fault of his proposed reforms.

Ostensibly, the actual debate between Whewell and Babbage begins with Whewell's critical remarks concerning recent contributions of mechanical philosophers and mathematicians to an understanding of the universe in his 1833 *Bridgewater Treatise*:

> 'We may thus, with great propriety, deny to the mechanical philosophers and mathematicians of recent times any authority with regard to their views of the administration of the universe; we have no reason whatever to expect from their speculations any help, when we ascend to the first cause and supreme ruler of the universe. But we might perhaps go farther, and assert that they are in some respects less likely than men employed in other pursuits, to make any clear advance towards such a subject of speculation.'[dccxxiv]

Babbage quotes Whewell's prefatory remarks in his own *Ninth Bridgewater Treatise.* Babbage seems to have regarded Whewell's remark as traitorous of the Cambridge community of mathematicians and particularly, of their accomplishments in advancing ideas on scientific notation. In the *Ninth Bridgewater Treatise,* Babbage defends knowledge of the existence of God by citing the abundant examples of evidence of the Creator in the works, evidence that scientists in the fields of geology, zoonomy, chemistry, and the like were busy collecting, classifying and interpreting. Whewell foresaw a potential danger in Babbage's argument, to some extent anticipating the evolution controversy that would ensue in the latter half of the century. The two thinkers had an open and gentlemanly disagreement on the subject -- although in his private letters Whewell refers to the circle of 'analytical mathematicians' to which Shepherd and Babage belonged with some derision.[dccxxv]

In his *Open Letter to Charles Babbage*, Whewell appears to acknowledge Babbage's point about the recent advances of science, although in many respects he remained firm on the wisdom of the very slow approach to the advancement of science.[dccxxvi] In the end, the sort of attitude promoted by Whewell seems to have been intended to soften the impact and slow the advance of science. It was the very sort of attitude to which Babbage strongly objected, since its prevalence undermined the advancement of science and technology in Britain. Babbage strongly disagreed with Whewell's view that new sciences should be gradually introduced into the university curriculum in order to allow time for an evaluation of their merits. Babbage was in general opposed to Whewell's under-rating of recent scientific progress, which he took to undermined attempts to advance the cause of science.

Unlike Babbage and Shepherd, Whewell seems to disavow that scientific evidence, aided by pure mathematics, can lead to firm and decisive theories.[dccxxvii] At some level, Whewell gives the impression of a lack confidence in the rational foundation in certainty of scientific theory. This, at least, suggested by his concern that new scientific theories not be introduced until one hundred years had passed, and in his efforts to eliminate heavy mathematical requirements that he considered excessive for the liberal arts student. Whewell's approach to science seems to suggest either a fear that scientific truth would undermine religious belief or that he thought that rapid ideological change would lead to dangerous social consequences.

Babbage's own motives in castigating English society for its lack of support for science may have been partly personal; his life was marred by frustrating and disappointing efforts to secure

public funds for his research. Unfortunately, Babbage was not an effective self-promoter, and he failed to see that the average government administrator or Member of Parliament would never grasp the merit and potential of his calculating machines. The principles of his machines went far beyond those of simple calculators, and in fact were conceptually based on principles that brought mathematics and analysis much closer together than a mere calculator could. His machine was more than a simple calculator; it was the prototype for a computer and ran according to rules and inferences. Indeed, one of the problems that Babbage spent years trying to figure out was a principle whereby the machine mechanically could carry numbers in a time efficient manner. As Babbage understood it, the solution would require a mechanism to allow the machine to anticipate all of the carrying operations that it would need to perform to follow the rule of differences, and then perform them all in a single operation at the end. It took many years to develop a machine that could run with speed, although Babbage made huge advances in his own lifetime -- advances that were hard for the average educated person to fathom.

As Babbage developed his 'curious machines', it became increasingly apparent that he was working to develop a device that could take over the repetitive, time-consuming acts of mental calculation. It was soon apparent -- and Babbage made no secret of this -- the machines could perform mental operations similar to those of humans. The public grew anxious, fearing and developing a sense of outrage at the machine and its audacious inventor, who had dared to devise 'machinery to calculate by differences, which, if well made, cannot err.'[dccxxviii] Initial reactions to Babbage's first completed Difference Engine were less than rewarding, although it was one of the most remarkable and advanced feats of mechanical engineering and design for decades to come. The Engine was, on one occasion, likened to a Trojan horse by the bureaucratic Robert Peel, who strongly disliked industry and technology. He suspiciously remarked that 'It is an engine designed against our walls or some other mischief hides in it.'[dccxxix] The statement is telling, for it shows an underlying attitude of fear toward the new technology. The lack of understanding persisted throughout his lifetime, and Babbage himself sadly reflected that 'The Analytic Engine is too much in advance of my countrymen, scarcely one of whom comprehends its results or sympathizes with its author.'[dccxxx] One outraged (but probably typical) critic named John Lee (1783-1866) took Babbage's infallibility claim for his machine as a direct affront to religion. Lee makes angry remarks in the margins of his copy of *Passages.* 'What does the Holy Father and his ministers say to this idea -- will they admit that the powers of mind of the author of the A E are equal to the powers of His mind -- If so -- they must admit the superiority of the powers of mind of the author of the A E.'[dccxxxi] [cf. Dr John Lee Principal - Edin Univ. Pres. 1840s]

Babbage had his supporters as well, some of whom supported him on principle, even if they were somewhat fearful of his research. Babbage's support was greatest in the earlier years of his project and outside of his native country, where the significance of his work was better understood. One of his strongest supporters was Byron's daughter, Ada Augusta, who became Countess of Lovelace. She translated Menabtea's paper on the Analytic Engine, adding extensive explanatory notes to help the reader to interpret the significance of Babbage's achievements. The notes were so good that Babbage tried to press her to write them up as an independent article. Lady Lovelace's article helped to elucidate to the public Babbage's own thoughts on the use and functioning of the Engine.[dccxxxii] Elizabeth Barrett, a young acquaintance of Mary Shepherd, also rose to Babbage's defence in a letter to her future husband, Robert Browning on 17 February 1844, supporting his right to creative expression and defending his search for truth, despite her evident reservations about his work. She writes,

> Do you know Tennyson? that is with a face to face knowledge?... That such a poet shd submit blindly to the suggestions of his critics is much as if Babbage were to take my

> opinion & undo his calculating machine by it.[dccxxxiii]

In addition to the lack of support and understanding, Babbage himself felt unappreciated by the public. Many were affronted by the idea of a calculating engine that could replace the functions of the human mind -- it seemed an irreligious and frightening advance. Though religious himself, Babbage was unhappy with the sort of conservative and slow course of change proposed by figures such as Whewell. Babbage claimed that the government had hindered the progress of science by failing to assist in the development of science, technology, and industry. He rejected Ada Lovelace's offer of financial support for his research and determinedly persists in his efforts top secure public funding for research. Babbage's views on government intervention were based on the assumption that governments will disinterestedly fund pure research, an assumption that we would question today, given the close alliance that has developed between corporate, government and university interests. Whewell represents the more conservative voice of concern regarding the appropriate speed, role, and extent of advance in science, technology, and industry. It is worth looking at the debate and discussion between Whewell's and Babbage, for their differences were especially evident in discussions of the roles of government and universities in advancing science.

Babbage spent many years trying to obtain government funding for work on his Difference and Analytic Engines. But instead of receiving government support, Babbage was forced to fund his own work -- even while he wasted valuable energy and time in trying to sincerely engage what amounted to a constant administrative run around. The symbolic aspect of Babbage's insistence on government support for science, industry and technology was at least as important a message as any other message that he left. Babbage, of course, envisioned this support as an unfettered funding of worthwhile projects, as determined by competent judges. According to Babbage, the government of England, unlike those in foreign countries, had failed to encourage scientists in useful discoveries, and had relegated science to a kind of sport for amateurs:

> In England, those who have hitherto pursued science have in general no reasonable grounds of complaint; they knew, or should have known, that there was no demand for it, that it led to little honour, and to less profit.[dccxxxiv]

Babbage's dream was to see the introduction of institutionalized support for science and of active intervention of government. He objected that the scientific societies to date were 'managed by a party or coterie' with the object 'of maintaining itself in power and to divide, as far as it could, all the good things amongst its members.'[dccxxxv] The situation in England was worthy of contempt and ridicule.[dccxxxvi]

The Babbage and Whewell debate is interesting insofar as it relates to attitudes towards science, technology and industry. On the one side, that claim is that science must be left alone, free from the influence and interests of government if truth is to be its object. On the other side, the claim is that social welfare requires that science be funded and made practical if it is to advance the general good.[dccxxxvii] But the friendly debate is notable for other reasons as well. For it serves to further illustrate the standard of professionalism in debate and the underlying humanitarianism valued by those in Shepherd's circle. Differences on the subject of how to move science forward aside, generally speaking, Shepherd's circle was among the most advanced in promoting science and technology and its benefits for society. Whatever reticence can be found within the group betrays an underlying an nagging worry regarding the growing conflict between science and religion, a worry that beset even the most ardent of advocates for science.[dccxxxviii]

For the likes of Shepherd and Babbage, science and truth should be upheld as part of the promise of a more enlightened and humanitarian world. The Creator must have made a world such as this, a rational world that held promise of salvation. Such assurance rested on one simple assumption: That scientific truth could ultimately be inconsistent with the laws that God created to govern the universe. Babbage and Shepherd held tenaciously to this view, despite the fact that the physical sciences had advanced numerous challenges and proposed truly radical new ideas about the natural world in the first half of the nineteenth century. Major contributions already in hand by the early part of the century were Erasmus Darwin's *Zoonomia*, Paley's natural theology, Dalton's atomic theory, Faraday's discoveries relating to electricity, Humboldt's ideas on rock geology, and several discussions of species evolution. There would be much to follow upon these discoveries, of course, but even in the first half of the century, the pace and significance of scientific advance was astonishing. Shepherd took an interest in several physical sciences, and especially in physics, geology, and zoonomy.

Shepherd appears to have subscribed, most likely as an Honorary Member, to the Geological Society of London. This is difficult to establish, however, since no women are listed as Fellows of the Geological Society of London between 1826 and 1838. In a letter to Babbage, Shepherd claims to be quite comfortable with the subject of geology, saying that she has already 'studied so much in Mr. Lyell's book', that a recent presentation on rock geology 'was quite familiar to me & easy to be understood as consistent with his principles'.[dccxxxix] Geological hypotheses were a source of great controversy and concern in the nineteenth century, and Shepherd, like most of her generation, found some of the newer geological interpretation of her day difficult to swallow. There is little doubt that the new geological views on rock formation would have given considerable pause to any sincerely religious thinkers of Shepherd's day. Many were convinced that the physical sciences must all somehow converge with the Bible, so that doubts about theory-data fit were likely motivated by prior commitments to Biblical claims, commitments that appeared to be at variance with descriptions of events taking place in geological time.

It is worth remarking here that Shepherd may also have written a third philosophical treatise, a teaser suggested in both the *Dictionary of National Biography* and a curious typewritten insert left in the Cambridge University copy of her 1827 publication.[dccxl] The third work attributed to Shepherd, entitled *An Enquiry Respecting the Relation of Cause and Effect*, is a bit of a mystery. Unlike the later works, the 1819 piece was published in Edinburgh together with a second, very different, work on natural history. Although consistent with the arguments of her 1824 and 1827 books, the 1819 work contains little that can be directly related to Mary Shepherd's original philosophical views. As a result, Shepherd's authorship is difficult to establish in the absence of further evidence. The 1819 publication on the *Theory of the Earth* that appears as the companion piece to the one on Brown's theory of causality attributed to Shepherd offers an imaginative reconstruction of the earth's history that attempts to account for geological data in terms of two catastrophic collisions.[dccxli] One of the collisions leads to an immense conflagration; and the other to a deluge. The picture of the earth and its development presented in the book fits with a Biblical account of the natural history of the earth, and any mention of time periods is decidedly vague.

But the approach of the anonymous 1819 work on geology is typical of its day -- at a time when geological studies were highly speculative. In truth, the book could well have been written by a number of Edinburgh scholars. So we do not know whether Shepherd wrote the 1819 work, but we do know that she was familiar with geology -- and particularly with Lyell's work. Shepherd refers to research suggesting a geological time span and explanation of geological phenomena according to slow and continuing forces on the earth -- both controversial hypotheses in her day. In a letter to Babbage, she remarks upon recent geological research. The research is along

the lines of Lyell's work, circa his 1828 trip to Mount Etna, which he later presented in papers to the Royal Society etc.. Like many, Shepherd reacts with scepticism to the new geological hypotheses. Her initial reaction to the presentation is that it suffers as a consequence of an insufficient fit between theory and data:

> Yet I cannot believe upon any evidence other than demonstrative, that there could be such an uniformity not merely of the laws; but of the facts or events in nature. That these [being] supposed sufficient land &, which man might occupy, that no man occupied the same, : - and that for ages. - Show me the world in impressure and not under analogous change maybe, & then 'I might believe,' however long & various might have been the changes our planet might have undergone: - Also, I do not see why the [remaining] rocks should not hold as much granite as those in [hills] surrounding.[dccxlii]

Whether the theory-data fit was truly inadequate, or whether Shepherd's bias in favour of a Biblical account hindered her objectivity is difficult to say. Given her historical context, it is notable that her initial reaction is at least somewhat open-minded -- the sort of response that one would anticipate from an intelligent, well-educated person who wishes to give a full and fair hearing to all of the views under consideration. Thus, Shepherd does not immediately dismiss the 'controversial' geological theory on prejudicial grounds, though she is dubious enough to ask for more information on the theory-data fit. She presents what she considers to be rational grounds for doubt, and these grounds are based on her view that the laws of nature must have a necessary status, a necessity established by means of demonstrative proof. It is easy to see this as a defensive stance against the new and growing geological evidence, and Shepherd's doubts about the new hypotheses show that she was a sincere and concerned Christian. But she was generally open to and optimistic about the discoveries in the newly emerging sciences of the nineteenth century; for he goal was to seek out the 'deeper' grounds that could resolve the seemingly incompatible doctrines. One of these foundational elements was the causal axiom, Presumably another related to the deep hope that at the most abstract level, there would be a basis for unity in knowledge. That such a meeting point existed was something that Shepherd and her intellectual colleagues firmly believed, almost as an article of faith. In consequence, Shepherd was devoted to the truth, and willing to face the evidence of the sciences.

Shepherd's attitude toward science was in fact quite typical of her circle. Shepherd and Babbage, for example, adopt the same basis for rejecting Hume's claims against miracles.[dccxliii] Both seem to have held that the occasional miracle would be consistent with an otherwise invariant principle of uniformity in nature, because a divine creator could well have designed the world as such at the time of Creation.[dccxliv] [Babbage on miracles] Shepherd was evidently curious about Babbage's views on the relationship between geology and Biblical history. For she writes of his view of miracles in a letter dated about 1839,

I read a great on Sunday in your Bridgewater treatise w. a new & increased delight. -

> The chapter on miracles appears to me as beautiful, as the mechanical instrument which serves as its illustration. That on the Mosaic history, is to my faculties somewhat obscure - I read it twice over, and am not sure that I yet quite catch the full meaning of some of the reasoning. How I should enjoy a talk on it - wt. you.[dccxlv]

In later life, Babbage expresses his thoughts on the subject in a manner that Shepherd herself, had she lived long enough, might one day also have expressed herself. As Babbage writes,

> Although I have contended for the Mosaic date of the creation of man as long as I

> decently could, and have even endeavoured to explain away some of the facts relied upon to prove man's anterior origin; yet I must admit that the continual accumulation of evidence probably will, at last, compel me to acknowledge that, in this single instance, the writings of Moses may have been misapprehended.[dccxlvi]

As this remark suggests, the intent of both Shepherd and Babbage was always to face the truth -- a truth that they held to be accord with faith. This attitude is perhaps no more than obliquely evident in Shepherd's response to new theories of geology, although it is clearer elsewhere. The strength of this conviction is shored up by the belief that religious and philosophical truth will be in harmony. For theoretically, on her view, all of the sciences, and even theology itself, must fall under the unity and necessity of the causal axiom. This idea seems to have been one shared by many of those in Shepherd's circle, and it was certainly held by the likes of Mill and Ricardo, who explicitly aimed to place even the social sciences on the same footing of axiomatic certainty.[dccxlvii]

Whewell's reticence to adopt this optimistic line betrays something like an underlying doubt about the unity of knowledge. Or perhaps his worry is simply that the time that would be required to discover and establish this unity would be so extensive as to seriously undermine religion. Whewell focuses on developing a view of science that is grounded in his conception of natural theology. For Whewell, our ideas are 'shadows' of Divine Ideas, and to see a law as a necessary consequence of our ideas is to see it as a consequence of the very Divine Ideas exemplified in the world. Understanding involves seeing a law as being not an arbitrary 'accident on the cosmic scale,' but as a necessary consequence of the ideas God used in creating the universe. Hence the more we idealize the facts, the more difficult it will be to deny God’s existence. We will come to see more and more truths as the intelligible result of intentional design. This view relates to Whewell's point in his *Bridgewater Treatise* that the more we study the laws of nature the more convinced we will be in the existence of a Divine Law-giver

Shepherd, like many others in her day, hoped that natural theology might resolve the apparent tension between science and religion. Given what Shepherd has to say about the causal principle in connection with physical phenomena, it is not surprising to find that she invokes her views on causality in connection with natural theology. She may have been influenced by the theories of writers such as John Ray, William Derham, and William Paley, although her views are also in keeping with those in her own circle. Shepherd adopts the view that proof of God's existence can be deduced from the complexity of design in nature. Her essay on the subject of natural theology is one of her shortest and simplest; she here ties her analysis to her view that causation is more than merely phenomenal, and focuses in a more general way on the causal relation and its connection with the organs of sense. Thus she takes up one of her favourite themes, the manner and action of causation on the sense organs.

Shepherd begins by saying that she intends to address issues around design in nature and Deity. She hopes to answer the charge that design arguments suppose that organization is itself a necessary attribute of the Deity. Shepherd denies that this is so, and the main ground for her denial is the manner and action of causes with respect to the sense organs. According to Shepherd, organization is exhibited in the sense organs in animal life. She points out that the current view of physiologists is that the organization of animal life, although one element of life, is not *itself* the cause of life. Rather, the organization or design of a being requires that changes be enacted upon it to support life. In this regard, the sense organs are merely recipients upon which the causal world impinges, and as recipients to causal influences, they give rise to perceptions, including the perception of design. 'Whatever the organs are, they are but qualities, in relation to mind, or the power of feeling, with which they unite in the order of perception.'[dccxlviii]

> In other words, the arrangement and first action of the organs, and the animal power to feel, are *given properties* to EACH, and therefore to ALL *men and animals*, antecedently to their own action, in conjunction with the *atmosphere* under which they first draw life. Thus organization does *not* give any original powers, but merely its action *changes* the action and perception of those powers.[dccxlix]

Most importantly, the original powers through which life becomes possible, she tells us, require that change to the sense organs occur *in time*. Since God is outside of time, the atheist's criticism that the design argument requires that God also have a design does not follow.

We see then, examples of the debates that ensued over the proper manner of introducing the sciences and of integrating scientific advance in society. These questions are linked to other practical problems, problems of how institutions -- government, university, or business -- can either help or hinder the search for philosophical and scientific truth. In both theoretical and practical senses then, attention to the developments in sciences was paramount for those in Shepherd's circle. Conflict in the group arose over the question of which values to attempt to preserve in advancing into the future. Whewell, for example, seems to have worried that religious truth would not survive the rapid introduction of new scientific challenges. Shepherd and others disagreed, Perhaps following the same line as Babbage, she seems to come out clearly in favour of the benefits of rapid advance of science. This she does because she is ultimately convinced of the unity in knowledge, of the social benefits of inventions based on the new knowledge, and of the importance of free and open inquiry. She was, from her youth, against party politics and personal attacks in name of achieving political end. We see this same humanitarian ideal embodied the manner of public debate among other members of her circle. We see it also in the issues for which they stood and in their intellectual and political aspirations to discover the laws that by which we could govern a country and live wisely as a society. Above all, Shepherd and her circle sought to give philosophical answers -- and to replace the persecution, exclusion, and personal attacks with a reason and humanism in negotiation. This was to be a foundation for ideas as well as a foundation for a democratic society. Indeed, the direction in which Shepherd's arguments aim must always be kept in view when considering her work. For though providing a philosophical basis for theism was an aim that motivated Shepherd throughout her life, she was also motivated by a certain set of attitudes toward open inquiry. At the same time, at a personal level, Mary Shepherd's own faith never wavered. She sought to defend the existence of a deity on philosophical grounds, the only safe and fair grounds upon which such a discussion should rest. Thus, her response to common sense philosophy and scientific challenges to religion was part of a larger project to establish, on the strength of reason and not of persecution, a foundation for theism, and a world in which free inquiry is upheld in the name of truth and God alike.

6.3 New College and Edinburgh University

As the mid-nineteenth century drew near, relatively little had been done to address the matter of religious tests in universities. Apart from the newly introduced London University, changes to Britain's established universities had been modest or non-existent. Policies and practices continued to enforce the requirement of adherence to the doctrines of the national Church. In Scotland, for example, those unable or unwilling to swear to the Confession of Faith continued to be ruled out as candidates for university positions. Archibald Tait, later to become Archbishop of Canterbury, declined the offer of the Greek professorship at the University of Glascow in 1838, on the grounds that he was unable to avow support for the doctrines contained in the

Westminster confession.[dccl] Thus, as the decades unfolded, little had been accomplished to change the institutions and to promote and secure academic freedom. It still continued to be the case that those unable to swear to religious oaths were ruled out as candidates for university positions.

Scotland would again show leadership on this front. As the more conservative and established universities in the southern parts of Britain braved their first brushes with religious controversy and persecution, institutional change was taking shape in Edinburgh on at least two fronts. First, there was a move to disrupt the Established Church of Scotland, a move that was accompanied by the introduction of Edinburgh's New College, whose mandate involved the education of ministers intending to work outside of the Established Church of Scotland. Secondly, Edinburgh University radically altered its policies relating to religious tests, restricting them to theological positions. Both developments represented significant institutional and social changes.

The Disruption of the Established Church of Scotland was in part a response to the state control of the Church, and in part a response to an Evangelical revival that urged the filling of a spiritual void created by the state dominance. In 1838, an evangelical preacher from America, Charles Finney, published his *Lectures on the Revivals of Religion* in Edinburgh's *Presbyterian Review*.[dccli] Finney's message, which seems to have struck a deep chord in Scotland, was a call to focus on the Holy Spirit as a source of renewal in the church. This call to spiritualism, and ultimately to a form of spiritual independence, aroused great interest, and eventually led a great number of clergy and their congregations into an evangelical fervour. In the years between 1838-1843, this evangelical fervour took hold in Scotland, and the movement took on great proportions. As such, a schism within the Established Church of Scotland began to develop. When the break did ensue, nearly half of the Presbyterians of Scotland had shifted religious focus. As a result, in 1843, there was a sudden need for a new church and educational infrastructure to accommodate the new congregations formed from this 'Disruption' of the Established Church.

The figure most central in the evangelical revival in Scotland, Thomas Chalmers, gave the inaugural address to the first Free Church congregation in Cramond -- just a stone's throw from Mary Shepherd's ancestral home of Barnbougle Castle. It was an important achievement on many levels, and one that had been the result of a long-standing movement to promote theological liberalism in Cramond parish. But Chalmers does not deserve the sole credit for having established Cramond as the epicentre of the Disruption. It was in large part due to the leadership of the Reverends Bonar and Muir that the Cramond congregation would be the first to openly avow support for the 1843 Disruption. Indeed, many Free Church clergy and laymen involved in the Disruption had links to Cramond. Among them were counted numerous distinguished clergy and professors -- Welsh, Candlish, Guthrie, Caird, Chalmers and Brewster.[dcclii] Professor Alexander Campbell Fraser, one of those involved in this union of non-conformist congregations under the Free Church, describes a surprisingly lively intellectual circle in Cramond, many of whom were central figures in the mid-nineteenth century Disruption:

> There I met persons of note, mostly Free Church clergymen and laymen: Welsh, my old professor, in the last year of his life, Candlish, the brilliant and versatile ecclesiastic, next in succession to Chalmers; and the philanthropic Guthrie, along with Chalmers and Caird, one of three illustrious Scottish preachers in the nineteenth century. Among the laymen Sir David Brewster was foremost.[dccliii]

So, despite the ancient history of religious conflict in the Dalmeny and Cramond, there is good reason to think that, by the turn of the nineteenth century, attitudes toward religion tended to

favour freedom of worship, tolerance, and diversity. The days of religious persecution in Scotland were by no means at an end, but there was a growing opposition to religious *intolerance* per se, and Cramond appears to have played an important role in this shift in attitude.

The Disruption itself was a risky affair for those involved. Sir David Brewster, whom Campbell Fraser encountered in Cramond shortly before the Disruption, is noted for having nearly lost his office after seceding from the Established Church of Scotland. 'He was then Principal at St. Andrews, threatened with expulsion from his office as a Free Church seceder - the Church Establishment claiming exclusive possession of the university chairs.'[dccliv] But many Scots evidently felt sympathy for the plight of congregations outside the Established Church. There was, of course, a long history of religious intolerance, and an equally long history of quiet compassion for victims of such intolerance. As girls, Charlotte and Mary Primrose, for example, often spoke with Archibald Bonar and Thomas Chalmers -- both of whom were later be instrumental in the 1843 Disruption of the Established Church of Scotland. Given the events and interests that marked their later lives, and the theological nature of their exchanges, it is highly probably that these discussions sometimes related to issues concerning freedom of conscience in matters of religion. The girls tutor, Pillans, would also have provided a strong model of religious independence as well as evoked sympathy for freedom of conscience in religious and intellectual matters.

Of the Primrose children, we know that Charlotte Primrose came to hold a deep interest in the cause of the newly established Free Church. Despite her love of the Anglican tradition, Lady Effingham had great sympathy for the cause of the Free Church. She is remembered in Edinburgh for having provided funding for a University chair on behalf of the Free Church:

> I must not forget the circumstance which made her name grateful and celebrated at Edinburgh; she founded, endowing with I think £ 3,000, a chair in the University required by the Free Kirk on its constitution being settled.[dcclv]

The Countess of Effingham in fact became a church patron to both the Free Church and the Anglican Church. With her husband's permission, she donated her dowry of £ 20,000 to built and endow an Anglican Church near her husband's Yorkshire seat. She later raised a sea hulk near Dover for the use of sailors, eventually building a substantial church to replace the sea hulk.
She then donated the 'Chapel Hulk' for the use of the Free Church. She was, in fact, a great friend and admirer of Thomas Chalmers -- though she evidently differed from Chalmers on doctrinal issues. But, according to the Primrose mores, such differences were not grounds for division and persecution.[dcclvi] Indeed, persecutions based on denomination were probably seen in much the same way by Mary Shepherd and her Primrose siblings.

A number of significant changes occurred in Edinburgh's academic institutions on the heels of the Disruption. In terms of university reform, leadership again came from Scotland. For in the same year that Chalmers led the Disruption of the Church of Scotland, he founded Edinburgh's New College for the purpose of educating Ministers of the 'Free Kirk'. New College symbolically achieved a new religious freedom in higher education in Edinburgh. And the need for this new religious freedom in higher education was never more apparent than in 1843. David Brewster, for example, Principal of St. Andrews, had been 'threatened with expulsion from his office as a Free Church seceder'.[dcclvii] The Church of Scotland, still in exclusive possession of the university chairs in Scotland, and seceders were technically ineligible to hold office. As Chalmers explained to the Cramond congregation, there was an urgent and immediate need for new

educational institutions and offices in the wake of the Disruption. 'A large number of teachers, as Chalmers informed the first Free Church Assembly on 20 May 1843, had already been dismissed from their positions for expressing approval of Free Church principles, and they must not be forsaken.'[dcclviii] As a result, plans for an educational institute to train new clergy were quickly undertaken, and fundraising campaigns initiated to build new schools and churches. Chalmers' call for immediate action on the educational front met with great success. In May 1843, just a few days after the Disruption, the Assembly of the Free Church appointed a committee headed by David Welsh to plan a college. The New College was immediately needed, and was opened in the very year of the Disruption, in November 1843. Initially, classes were held in rented rooms on George Street, but eventually the college was moved to a site overlooking Edinburgh's New Town. By 1847, half of Scottish children were in Free Church schools, and there were ministers in training in New College to teach them. Thus, the need to provide educational training for ministers and teachers associated with the Free Church was met. New College was eventually merged with the University of Edinburgh, and with this change, Edinburgh had fully embraced a new liberal set of values for the future -- values that embodied the liberal ideological principles of enlightenment, the very principles of education long upheld by Edinburgh's greatest philosophers.

At Edinburgh University, change was slower. This slowness was can be accounted for by the same recurring efforts on the part of the conservative factions to forestall progressive change by resorting to petty and persecutory attacks and party politics. Experience of the retrograde policies and practices in Scotland's universities had profoundly marked the lives of individuals such as Stewart, Brown, Shepherd, Mill, and Pillans, providing impetus for change despite considerable resistance. Success would eventually come, however, and Edinburgh seems to have been the breeding ground for the new thought and activism that led to change. By the mid-1840s, Edinburgh's Senate, under the leadership of James Pilland Jr, began in earnest to discuss the possibility of restricting religious tests to those involved with the professional training of students in Theology. Pillans, the Professor of Humanities at the University of Edinburgh and descendant of Mary Shepherd's tutor, succeeded in advancing the motion that would eventually lead to academic freedom at Edinburgh University. The 1844 motion read: 'That in the opinion of the Senatus Academicus the time is now come when -except in regard to the Faculty of Theology -a change is required in the law which calls upon every Professor in every University of Scotland to sign the Confession of Faith and the Formula before his induction.' The case for university reform is successfully advanced, and the original Act of Parliament requiring the religious test is modified. It is worth noting the slow progress of this change, which begins a full century after the Hume affair was initiated in 1744. The following Motions regarding University Tests are chronologically ordered and taken from the Town Council of Edinburgh Minutes and the Extracts from Laws and Regulations enacted by the Faculty and Senatus Academicus, and their record, which is included directly below, shows that opposing parties continually attempted to thwart the introduction of progressive policies.[dcclix]

Motions regarding University Tests taken from the Town Council of Edinburgh Minutes and Laws and Regulations enacted by the Faculty and Senatus Academicus:

[Town Council]
27th February 1844

> Edinburgh 26th February 1844...The College Committee unanimously report to the magistrates and Council that they should approve and adopt the following Memorial to Her majesty's Government. [The Memorial argues at length in favour of the abolition of religious tests, because they "are discouraging to such as are honourably engaged in

pursuit of literary or scientific eminence, and are besides unnecessary seeing that those entrusted with the appointment of Professors possess the ordinary means of ascertaining the religious and moral qualifications of Candidates."]
The Magistrates and Council approved of the report and adopted the Memorial [two Councillors dissenting]. (197)

[University Senate]
13th March 1845

Prof. Pillans gaves notice of the following motion: -

1. That in the opinion of the Senatus Academicus the time is now come when -except in regard to the Faculty of Theology -a change is required in the law which calls upon every Professor in every University of Scotland to sign the Confession of Faith and the Formula before his induction.
2. That a Committee be appointed to draw up a Memorial. (278)

[University Senate]
19th April 1845

Mr Pillans' motion regarding Tests submitted to the Senatus at last meeting was taken into consideration and agreed to...the Principal [Rev. Dr. John Lee] dissenting for reasons to be afterwards assigned. (278)

[University Senate]
27th November 1847

[Drs Christison and Gregory move to petition the Queen to redress the injury to the university caused by the present 'anomalous constitution, and more especially from the administration and jurisdiction now exercised by the Town Council'...and ask for a transfer of 'the government of the University into the hands of a duly constituted University Court'... (280-1)

[Town Council]
30th November 1847:

[Motion]: That it be remitted to the College Committee to prepare a Petition to Parliament for the abolition of all University Tests, except in case of Chairs of Divinity, Church History, and Biblical Criticism, and that the Petition be forwarded to the City Members for presentation and support. [The Motion was carried by a majority, and the Lord Provost was authorised " to sign the Petitions, and to affix the City Seal thereto."] (200-201)

[University Senate]
25th March 1848

The following motion was made by Dr. Christison, and seconded by Professor Dunbar:-

"That a petition be presented by the Senatus to both Houses of Parliament praying that the Acts relative to University Tests in the Scotch Universities be amended; but so as to procure the Christian and Protestant character of these Universities, that in any

Amendment of these Acts it shall be made a condition that Principals, Professors of Theology, Church History, Biblical Criticism, and Hebrew, and any other Professorships that may be instituted for the professional training of Students in Theology, shall be Ministers or Licentiates of the Church of Scotland."

On being put to the vote the Motion of Dr. Christison was carried by a majority. (281)

[University Senate]
1st August 1848

The Senatus unanimously resolved that the attempt by the Patrons to assume to themselves the exclusive power of admitting Professors is wholly contrary to Law and to the practice which has prevailed hitherto, is an invasion of the rights and privileges of the Senatus Academicus, and they deem it necessary solemnly to protest against this proceeding of the Patrons, and further direct Mr Cook as their agent to intimate this protest to the Patrons either by notarial instrument, or otherwise, as he shall be advised by Counsel will most effectually vindicate the Rights of the Senatus in this matter. (281)

[Town Council]
3rd June 1851

Bailie Fyfe, in terms of notice given by him, moved as follows: - That the Tests required to be taken by Professors elected to Chairs of Literature, Science, and Philosophy in the Universities of Scotland, and which were originally imposed in 1690, having now, in the altered circumstances of the country, become altogether unsuitable, and their continuance proving injurious to these Universities, the Council agree to present Petitions to both Houses of Parliament praying that a Bill now pending before the House of Commons entituled "A Bill to regulate admission to the Lay or Secular Chairs in the Universites of Scotland," may pass into a Law.
[The Motion having been seconded, the previous question was moved, and after a vote "the Motion was adopted by a majority of 27 to 3, and a remit was made to the Lord Provost's Committee to prepare and forward the Petitions, which the Lord Provost was authorised to sign and seal in the usual way."] (201-202)

[Town Council]
13th January 1852

Bailie Fyfe, in terms of notice given by him, moved as follows: -

That the Tests required to be taken by Professors elected to Chairs of Literature, Science, and Philosophy in the Universities of Scotland, and which were originally imposed in 1690, having now, in the altered circumstances of the country, become altogether unsuitable, and their continuance becoming injurious to these Universities, the Council agree to present Petitions to both Houses of Parliament praying that these Tests may be totally repealed.
The foregoing Motion having been seconded...was unanimously adopted by the Magistrates and Council, and a remit made to the Lord Provost's Committee to prepare the Petitions, which the Lord Provost was authorised to sign and seal, and to transmit the same for presentation at the proper time. (202)

[Town Council]
8th February 1853

> Baillie Fyfe again proposes a Motion to petition Parliament praying for the abolition of 'the Tests imposed upon Professors at thier admission to Chairs in the Universities of Scotland, other than to the Theological Chairs...' (204)
>
> Councillor Hill proposes amendment on the grounds that
>
> 'the motion is inexpedient at the present time, seeing that there is difference of opinion existing as to those Chairs which ought to be considered Theological, and seeing that to grant its prayer would be to open up the Lay Chairs to men of questionable principle, an evil of paramount importance in all matters of Education.' (204)

[Town Council]
5th April 1853

> Another motion to approve the proposed Bill, and to say that the Council does not require the official declaration by Parliament before the motion is brought into effect. (205)

When Pillans introduced his 1844 motion, one hundred years had passed since Edinburgh's 1744 Hume affair. To us, the slow pace of change on the issue is almost unfathomable. But it was not until 1844 that the issue of religious tests would regain centre stage in Edinburgh. When Mary Shepherd died in 1847, the reversal of policy had not yet been achieved, although the wheels that would introduce permanent change and ensure freedom of conscience and speech had finally been put in motion. And, the persistent efforts of detractors who saw their own gain in preserving the conservative policies that would prevent the free and democratic voice would delay the change in policy for a few more years yet. It was only in 1853 that the Town Council and Senate of the University of Edinburgh actually succeeded in seeing that changes to the Parliamentary Act required to eliminate the requirement of University Tests to just those professors involved in 'the professional training of Students in Theology'.[dcclx] Hence, even after all this time, surprisingly little had been done to address the matter of religious oaths, which had been an issue even before the Leslie affair.

It is interesting to note that it was again Edinburgh that showed a leadership in bringing about reforms that would help to establish a fuller sense of academic freedom in Britain's universities. The struggle for this freedom was a long and hard one, and the value of the freedom achieved is not easily overestimated. It is this freedom of expression that is the cornerstone and the very basis for the success of democratic society, and it was not a freedom to be unwittingly sacrificed for lack of appreciation of its rarity and worth. Fortunately, Mary Shepherd and her peers never lost sight of the importance of their goal. Thus there ensued a very fitting end to the activism for university reform on the part of Mary Shepherd and her generation of Scots.[dcclxi] Their youth was influenced by leaders such as Dugald Stewart, who taught them the importance of the enlightenment ideals of liberty, social justice and freedom of conscience, which were seen as the only true basis for inquiry in the university. Mary Primrose, her siblings, and many others of her generation took this message to heart, bringing to life the insights of the enlightenment. Without their efforts to bring theory into practice, the lessons of the enlightenment would themselves have been lost.

6.4 Mary Shepherd and Scottish Philosophy

As for Mary Shepherd and for women in the university, it would be decades before women were admitted to the standard degree programs in British universities. Mary Wollstonecraft, as early as 1792, had argued that women had a right to the benefits of education, but it was nearly a century until this voice would be fully heard. Fortunately, in the long run, efforts to promote higher education for women were effective. In 1861, after a long gap, John Stuart Mill followed Wollstonecraft's *Vindication of the Rights of Women* with his *The Subjection of Women*. In 1862, George Grote, Vice-Chancellor to the University of London, pleaded for the admission of women to the University of London.[dcclxii]

After decades of debate and discussions on the subject of women in higher, women were admitted to London University on a regular basis in the late 1860s. London University was in this case central in advancing arguments in support of women's education. As one might expect, Scotland and Edinburgh played important roles in establishing the precedent. Given the advanced state of the educational system in Scotland, and the fact that educational opportunities were available to both sexes, it is not entirely surprising to learn that by the early nineteenth century, some women had been admitted to courses at the University of Edinburgh on an informal basis.[dcclxiii] During the summer session of 1826, for example, John Leslie introduced lectures in Natural Philosophy for mixed classes of men and women. The Town Council permitted the course for just a single session. Similarly, Humphrey Davy, Sydney Smith and others had admitted both men and women to his lectures offered through London's Royal Society and London University.[dcclxiv] In light of such innovations, questions appear to have been raised in Edinburgh concerning policies on the participation of women. By and large, the discussions resulted in immediate setbacks. For example, when the Council of the Royal Society of Edinburgh considered the matter of its policies concerning the admission of women to the Society and its library, the results were negative, enforcing restrictions where none had previously existed.[dcclxv] In a similar move, the matter of informal arrangements that had enabled female students to attend lectures was brought before Edinburgh University Senate, resulting in an explicit ban of the practice.[dcclxvi] 'It is true that ladies had been admitted in the early nineteenth century to certain special courses of lectures given by individual professors on their own subjects within the College buildings; but attendance on such courses could not qualify them for degrees and the Senate discontinued the experiment.'[dcclxvii]

In light of the negative attitudes towards women's education evident in the nineteenth century, it is sometimes difficult to imagine how a girl like Mary Primrose could have become a philosopher in late eighteenth century Edinburgh. Fortunately for Mary Primrose, the prevailing educators and leaders in her circle were political moderates.[dcclxviii] Within her family and society, attitudes tended toward freedom and tolerance, and as such, liberal values would have influenced the thoughts and interests of the young Mary Primrose. In an odd way, Mary Primrose would also have benefited from her precocity with regard to women's higher education. For, in her youth and early adulthood, an educated woman was simply a curiosity, and it was not until a substantial number of women expressed interest in higher learning that policies excluding women were set down. Thus, it was only toward the middle and late nineteenth century that negative attitudes towards higher education for women became deeply entrenched. It is interesting to note, however, that in the nineteenth century, one of the 'problems' identified with a system of national testing introduced by the University of Edinburgh's was the large number of girls writing and passing the tests. In 1883, 746 of the 891 candidates who were tested were girls.[dcclxix] The reason that so many girls were admitted to the national exams is unclear. However, one would expect that if the large majority of those tested in 1883 were girls, that there had already been a great many girls in attendance at schools in the eighteenth century,

and that many of them had also achieved high standards of academic excellence.

Thus, London University was not alone in leading the way to an egalitarian approach in education. In Edinburgh, the Association for the University Education of Women led a campaign for the admission of women to higher education. Perhaps fittingly, Edinburgh was among the established universities in Britain where changes first became official. In 1867, Edinburgh admitted women to study arts. Initially, lectures to the female candidates were given separately by willing professors during the winter session, and female students were awarded 'certificates in Arts'. After another twenty years, and much controversy and even some legal action, Parliament became involved, and finally authorized universities to admit women to medical and other degrees.[dcclxx] Meanwhile, by the late 1860's, Edinburgh's Association for the University Education of Women had at least succeeded in establishing a course of study for women. Appropriately, Archibald Campbell Fraser, in his introductory lecture to his 'Course on Mental Philosophy', tips his hat to Mary Primrose, who, under her married name of Lady Mary Shepherd, became known as Scotland's first female philosopher.[dcclxxi] As Fraser reminded the aspiring young women, 'Lady Mary Shepherd, some forty years ago, in her *Essay on Cause and Effect*, and *Essays on the Perception of an External Universe*, discussed with ingenuity and acuteness some of the profoundest questions to which the human mind can be applied.'[dcclxxii] And so it was. For, Mary Primrose had established that a Scottish girl could well become a philosopher. It is well to reflect a little on what she did accomplish, and on the significance of her contributions.

Mary Shepherd's philosophical work is best understood in light of Scottish philosophy and the empiricist response to Hume. Following Hume, new ideas on causality and induction were introduced and integrated with debates in science and religion. The series of conceptual and ideological changes, when seen in light of the roles played by Mary Shepherd and her circle, show that the original controversy around Hume in Edinburgh led to gradual changes throughout the educational system. It is important to note that the intellectual response to Hume occurs within a specific political and social context, a context in which many assumptions about causality come under examination by Mary Shepherd and her friends. Thus, Shepherd's philosophical contributions to thought on causality and induction are part of a complex reaction to Hume's philosophy, one that is ultimately tied to ideological and institutional change in Britain.

In the long run, the discussion of subjects such as causality, theism, and freedom of conscience came to a head at all of the major British universities, although especially at Oxford -- arguably the most conservative among them. The Oxford movement led to a revival and renewal of the discussion of theism -- this time with new ideas on causality and induction in hand. John Stuart Mill, William Hamilton, William Whewell, William George Ward, Alexander Campbell Fraser, and others enter the debate. Attempts were made to produce new proofs for theism -- proofs that will not falter on the analysis of causation. These proofs were of limited value in the long run, and just as controversial as their forerunners, but the advances in philosophy of science were longer lasting. The goal was to produce a proof that could build on empiricist views of causality, withstand challenges to the Design Argument, and ultimately defeat atheism. The long tradition of explaining the meeting points of the mysteries and evidences of Christianity, however much disliked, presented ongoing debates involving causality that simply had to be resolved. In particular, there was no way to avoid the doctrine of the Eucharist, a doctrine at the very center of not only the Oxford movement, but also the Episcopal faith:

> The Catechism was explicit that 'the Body and Blood of Christ are verily and indeed taken and received by the faithful'. The Liturgy expressed this belief, in prayer and exhortation and rubric. The teaching of Scripture was plain, that of the Fathers

concordant.[dcclxxiii]

The mystery of the Eucharist, which had presented such a problem for the unity of Scotland's Episcopal tradition, and such a barrier to any unification of Episcopal and Presbyterian denominations under a single national Church of Scotland, was revisited with a new account of causality in hand.[dcclxxiv]

The revival of interest in Catholic and Evangelical traditions gathered momentum at Oxford, and figures such as Ward and Newman had taken a hard line on issues relating to doctrinal interpretation, eventually defecting from the Anglican Church. As the Oxford Movement had become increasingly politicised and focussed, it found a natural ally in the Episcopal Church of Scotland. H.R.T. Brandreth, in his book *The Oecumenical Ideals of the Oxford Movement*, traces the movement back to Jacobite supporters and Non-jurors. This, along with the Catholic element in the revival, links it to the northern segment of Scottish Episcopacy. Specifically, the link is to those who still saw a future for Episcopacy as a Scottish national church closely aligned with the Church of England. William Perry pursues this theme in his book *The Oxford Movement in Scotland*, saying that many Scottish clergy were already ' by conviction and sympathy, Tractarians long before *The Tracts For the Times* were written'.[dcclxxv] This conviction may be loosely attributed to the Catholic element of the revival, but is more specifically ties to interpretation of the Eucharist, and related metaphysical issues. Some of Newman sermons, for example, attempt to address the issue directly.

In his later sermons, Newman rejected efforts to deal with the Eucharistic presence as a philosophical problem, and he especially rejected the rationalism and liberalism that he saw in Whately and his circle. Whately himself had declined to interpret the metaphysical doctrines, and claimed to dislike metaphysics, although he generally favoured the rationalist outlook and program in other matters. Whately's view seems to have been that issues such as the Eucharistic presence are best left mysteries and that analysis and dissent would surely not help to unify and strengthen the church. Newman, however, was not content to let such matters rest. Like other Tractarians, he explicitly rejected the doctrine of transubstantiation in the Eucharistic sacrament, that is, he rejected the idea of the mutation of one substance into the form of another as being contrary to Scripture. However, Newma did attempt some sort of analysis of transubstantiation.

Newman's analysis of transubstantiation, although not based in the empiricist or rationalist traditions, did require some discussion of causation. For example, as some had argued, if the testimony of the senses is to be relied upon, then transubstantiation is false. Thus the senses, must in some way be deceiving us when they tell us that bread and wine are present. Rather, there must in fact only be a 'Real Presence' -- and no bread and wine at all. On such an account, the bread and wine undergo no substantial change in the Eucharistic sacrament since the only substance present throughout is that of Christ. Like many Anglican churchmen, Newman here sweeps away the historical metaphysical analysis of the 'Real Presence', rejecting as a basis for analysis the definitions of the nature of real presence. Indeed, any analysis that tries to make the real presence intelligible in an objective, and not merely a subjective sense, is bound to run aground. In particular the doctrine of causality and the emphasis on the evidence of the senses and reason would be sticking points. So, in answer to the question 'How could Christ be present both in heaven and on the alter?', it would have to be pointed out that that the eucharistic presence was a spiritual presence, and that very little was known about the nature and action of spiritual bodies. And the sensible evidence relating to the bread and wine that seemed to count against the Eucharistic presence were simply dismissed as a test of faith.[dcclxxvi] Like many of his colleagues then, Newman shifted focus onto the spiritual

effects of the mysterious presence of Christ, which was, after all, the important issue. Thus, doctrinal interpretation, including interpretation of causality in the Eucharist, would become central to the Oxford movement, and would lead to a continued discussion of the philosophical issues around causality and theism.

Philosophically then, the impetus for the Tractarian and Episcopalian discussions of the Eucharist in the nineteenth century can be tied to the original challenge that Hume was thought to have posed for religious belief. The significance of that challenge was, a century later, still being processed in the minds of British theologians. Whately had already shown that it was impossible to take Hume entirely seriously -- for Hume's scepticism could never succeed in producing convincing doubts about well established historical facts, facts to which the rational mind is compelled to assent. But there nonetheless remained a need to demonstrate anew the rational foundation for theism. Such a foundation must be one impervious to Humean doubts, and so it must replacing the flawed *a priori* and *posteriori* arguments for causality and God's existence.

The analysis that was initially put forward was published in a book entitled *Philosophy of Theism*.[dcclxxvii] Published anonymously in 1857 by J&D Croll in Glascow and Ward and Company in London, the book appears to be the mature work of someone well versed in Scottish, English, French, German and American philosophy. References are made to arguments of the Scottish common sense philosophers, as are authors such as John Stuart Mill, Whewell, Cousin, Tappan, and Edwards.[dcclxxviii] According to the book's author(s), 'The direct object of the work is not to prove the existence of God, but to investigate the method to be pursued, in order to arrive at a proof of his existence.'[dcclxxix] The goal is accomplished in three stages. The first part of the work is devoted to a description of the dependence of theology on metaphysics, and particularly to establishing the importance of the causal relation to theism. The second part is a vindication of metaphysics that rests the foundation for the causal relation on a mathematical foundation. The third part describes the method of proof for theism, being a 'Proof of Being of God from Organism'. An excerpt from the book's introduction gives a good sense of the analysis and intent of its author(s):

> In the first part we have attempted to show that a purely *a priori* or a purely *a posteriori* proof of the existence of God is impossible. We cannot, on the one hand, arrive at a proof by means of *a priori* elements alone without experience, without a priori elements. The only possible way, then, is by a method which combines both. We have thus two elements in the proof -- *objects* or *facts of experience*, and *a priori principles*. But before we can legitimately use these principles in our proof, in opposition to the Atheist, we must first establish their validity. This we cannot do without having recourse to Metaphysics. But here a formidable difficulty meets us at the outset; for Metaphysics itself is a science, the validity of which few Atheists will acknowledge. And, to add to our difficulty, Theists themselves have generally misunderstood or underrated this science. We are therefore necessitated to enter into a vindication of metaphysics, which forms Part II. We find that the chief objection urged against Metaphysics, is the fact of its present imperfection when compared with Mathematics and the Natural Sciences. We are then led into an examination of the essential difference between Metaphysics and Mathematics, in order to show that, from the very nature of Metaphysics, it must succeed Mathematics, and that its present imperfect state is no proof whatever of any essential defect in its nature. After this, we are prepared to enter into the third, and last, part of the work -- a discussion of the method of proof. But before proceeding far, we find that we must have recourse to the principles of causality, and here, again, another difficulty meets us; for this principle is in about as unsettled a state as Metaphysics itself,

> and we are then led into a long discussion, in order to fix precisely its nature and import; after which, all that remains is simply the exposition of the method of proof.[dcclxxx]

Regardless of who authored the work, it is evident that all of major elements in the analysis are ones found in Mary Shepherd's works of 1824 and 1827. There is first the examination of *a prior*i and *a posteriori* approaches in the analysis of causality. Secondly, there is the foundation in certainty for the causal relation by appeal to mathematical analysis -- the same sort of analysis that we find in Shepherd's own appeal to algebraic signs. Finally, there is the argument that the proof of God's existence can be made by appeal to the concept of organism. Thus, we see that Mary Shepherd's contributions in the 1820s may well have reached her contemporaries and immediate successors. All the while, her works, like those of many women, were being quietly suppressed, discarded, and forgotten.

The subject of 'Philosophy of Theism' was not forgotten after the 1857 publication. In 1871, Ward began a series of articles that appeared in the *Dublin Review*, articles that later came to be reprinted as a book entitled *Essays on the Philosophy of Theism.* In these articles, Ward's attitude toward figures such as Whewell and John Stuart Mill becomes quite evident.[dcclxxxi] Ward argues against the 'experiential school' of Mill, showing that he is just as opposed to other empiricist schools as he was to the 'limitless rationalism' of interpreters such as Whately. Ward's basic position was that theism was a conviction based in man's moral nature. Ward's plan was to:

> Establish the mind's power to perceive objective truth, to acquire knowledge of objective facts by intuition (to use the technical phrase), and the one coherent philosophy which at that time was paralysing the very idea of religious inquiry, must halt and fail to effect. The criticism of Theistic philosophy as *defective* would no doubt remain. But from its negative character this was much less formidable; or at least it admitted a common basis of reasoning with the *a priori* thinkers, which the Experience Philosophy professed to have destroyed.[dcclxxxii]

The goal then, was to put a stop the development of the Hume's position that he saw in Mill, and that would also appear to have been advanced in the 1857 *Philosophy of Theism*, wherein a foundation for knowledge is ultimately derived from sense experience. Indeed, Ward explicitly objected to both Mill's approach and to the sort of middle ground in the debate presented by thinkers such as Whewell:

> Mr. Ward held that nothing but constant concentration on a few critical points was required to show the root doctrines of the Experience School could not stand philosophically. Whewell and others had introduced confusion into the controversy. For example, in endeavouring to prove against the experience School that the mind can perceive the intrinsic necessity of certain truths, they had treated the relative necessity of natural law as on a similar footing with the absolute necessity of mathematical truth. Mill had been victorious in his criticism of such loose thinking, and his theory was daily accepted by a larger number as conclusively established. Ward's object was to narrow the ground of controversy, to seize upon his root-doctrine and confront them; to stand over him till he confessed that they could not be logically defended. Hence the narrowness of the ground taken up.[dcclxxxiii]

Ward's basic strategy was to adopt intuition as the certain foundation for theism, much as Thomas Brown had first done in defence of the idea of a necessary cause and belief in God in

1805. The strategy was not highly regarded in its day, and it is certain that Ward underrated the philosophical acumen of his opponents and the force of their positions. He has also been characterised as having a 'profound ignorance' of induction.[dcclxxxiv]

Some years later, in 1895, Alexander Campbell Fraser would also publish a work entitled *Philosophy of Theism*, to the same end as those previously published under this title. Fraser's approach is closer to material later published on the same subject by several American transcendentalists, and shows the extent of the influence of German idealism on his thought.[dcclxxxv] [cf. Fraser] Fraser takes off from the strategy of the middle ground found in Whewell and others who sought to unite the Kantian *a priori* with the *a posteriori* elements of inductive science. Fraser introduces German Idealism into the debate, adopting a subjectivist line on the causal relation that extending the analysis of causality well beyond the sort of realist and objectivist commitments that Whewell and Shepherd would have insisted upon. Borden Browne would go on to develop further ideas under the title *Philosophy of Theism* in 1899. [Borden Browne]

But the most significant part of all of this is that the disputes of the Oxford movement and of the Scottish theologians all revolved around causality, theism, and academic freedom, and hence, ended in connecting philosophical analysis and debate to social and ideological change. The origin of the debate was, as in the affairs of Hume and Leslie, part of an effort to demonstrate that the provability and rationality of theism had survived the atheistic threat of Hume. Like the controversies in Scotland, the Oxford movement would tie together the politics of church, state and university.

If any approach could have represented the position closest to Mary Shepherd's, it was that of the original work of 1857. Indeed, the 1857 work entitled *Philosophy of Theism* represents a culmination of the same methodological and philosophical goals that Mary Shepherd had aimed at in her responses to Hume, Berkeley and others in the first quarter of the nineteenth century. Although such advances in theology were of limited value, the news ideas on causality and induction led to long-lasting advances in philosophy of science. And all of these advances can also be traced back to Hume and Leslie, and to the original motivations and contribution of Shepherd and other members of her circle. Apart from the recording of social and political circumstances and their connections to philosophical ideas, some sort of overall assessment of Shepherd’s philosophical contribution, particularly the contributions to epistemology and philosophy of science, is appropriate, if only in a preliminary way. It is to this that we must finally turn our attention.

The most obvious question, of course, is whether Shepherd fits into the Scottish school. Insofar as the Scottish school is identified with adhering to some version of a common sense doctrine, Shepherd is not a member of that school. In fact, one way of understanding her philosophical motivation and work is to see her as carving out a position that is decidedly *against* common sense. This is not to say that she rejects all of the tenets of her Scottish predecessors. For it is evident that Shepherd develops her analysis in a way that draws inspiration from many of her Scottish predecessors, just as it is apparent that she develops a unique and original metaphysics and epistemology. Another way to understand Shepherd's connection to the Scottish school is to note that she very often focuses on the very themes identified with the Scottish school; the themes of Hume, empiricism, realism, perception, and representation.[dcclxxxvi] If emphasis on these themes is taken as the main criteria for inclusion, then Shepherd ought in fact to belong to the Scottish school.

Where and whether Shepherd fits into the Scottish tradition in philosophy may easily be questioned. She stands apart from her Scottish contemporaries in adopting a transcendentalist position as grounds for rejecting Hume. Indeed, what makes Shepherd's contribution to the debates of her day intriguing is that she stands apart from her Scottish contemporaries in adopting a transcendentalist position against Hume. Moreover, in developing her transcendentalist response to Hume and Berkeley, Shepherd develops an original metaphysics and epistemology, a position that represents a departure from the Scottish common sense tradition in philosophy. In the end, the conclusion that Shepherd draws is that reason supplies knowledge of the causal relation and of its 'manner of action', and hence, supplies the true foundation for science, moral philosophy and belief in God.

Fearn, you may recall, looked only far enough into Shepherd's position to see what appeared to him as a union of scholastic arguments for God's existence and an empiricist theory of ideas. Fearn's criticism of Shepherd is interesting not only for the light shed on how her view can be misread, but also for the questions it raises regarding the proper interpretation of her philosophy. Fearn is correct in pointing out Shepherd's metaphysical dualism, he is wrong in thinking that Shepherd's argument makes a direct appeal to ontology to explain real extension. For like Kant, Shepherd makes appeal to transcendentalism to explain why actual physical objects, including the sense organs and other objects, are required for the possibility of sensation. When Shepherd holds that unperceived, extended causes must be presupposed as support for ideal, unextended phenomena; she does not argue by appeal to the real essences of unperceived causes. What she invokes is a transcendental argument that rests on the distinction between subjective and objective elements in cognition, and the role of the latter in our coming to have trustworthy knowledge of external existence. It is only by supposing Shepherd's metaphysical views are intended as dogmatic assertions, and by ignoring her view that we never know the real essences of things, that Shepherd can be made to sound like a scholatic. And in missing her transcendentalism, Fearn has missed the tenor of her arguments against Hume and Berkeley, and the sense in which Shepherd differs from her earlier empiricist contemporaries.

As a transcendentalist, Shepherd aims at a sort of compatibilism between empiricism and rationalism. She draws on elements from both views, and seems entirely comfortable in doing so. Insofar as Shepherd is a transcendentalist, comparisons to Kant are helpful. Apart from circumstantial evidence, chief among the reasons why comparison between Shepherd and Kant seems appropriate, is that Shepherd's realism turns on her claims that the mind contributes *a priori* the idea of a cause in representation and causal principle in judgement. Locke, for example, was unaware that the thesis of transcendental idealism might supply a means of avoiding sceptical idealism. Indeed, he was so far removed from the consequences of his own theory, as Reid remarks, that he quite failed to perceive that his own theory implied the impossibility of our having an idea of power.[dcclxxxvii] So if Shepherd's is in any sense completing a Lockean programme, the task is accomplished in way that draws her view closer to Kant's transcendental idealism than to Locke's transcendental realism.

It is also possible, of course, that Shepherd understood Locke's position as one approaching more nearly to Kant's than is often thought to be the case. And this leads to questions about what she could possibly have meant in describing her own theory as a ‘modified Berkelean theory'. My suggestion, of course, has been that we ought to read Shepherd as a transcendentalist. But if so, it is not entirely clear to what extent Shepherd's transcendentalism can be tied to Kant. There are elements of Condillac in account of extension. If Shepherd did read Villers, she may have been influenced by his claim that Condillac saw an important role for transcendentalism in addressing the problems of empiricism, and in his additional remark that Condillac's recommendation ought to be taken very seriously by empiricists.[dcclxxxviii]

It is also clear that Shepherd wishes to endorse a form of realism, though she distinguishes her view from Malebranche, Leibniz, Reid and others. She appears to want to distance herself from appeals to the direct intervention of God, pre-established harmony, immediate intuition, and the primary/secondary quality distinction:

> Thus *some* philosophers make *God create all the images at the moment they appear in every mind.* [Malebranche] Others conceive there is a pre-established harmony between the qualities of the external object, and our inward perception of it? [Leibniz] One considers the sensations arising from *some* of the senses to exist *outwardly*, *but not those of others*, arising from the *rest* of the *senses.* [Reid] Another gives up all outward existence whatever of objects and qualities. [Berkeley] And some suppose that if there be such things, that unless they be *like* our sensations, they are not worth talking about. [Hume].[dcclxxxix]

As the context of the passage makes clear, Shepherd does not intent to follow any of these thinkers in her own philosophy. Indeed, the form of realism that Shepherd wishes to endorse against the scepticism of Berkeley and Hume is not that of her predecessors.

Shepherd's argument does not amount to a straightforwardly Kantian refutation of idealism. However, it does make appeal to a number of elements found in Kant's transcendental idealism. To wit, it makes central to the refutation of Berkeley's idealism our ability to distinguish self-conscious awareness from the awareness of outward things. It also emphasises the dependency of sense objects on *a priori* elements contributed by the mind, and claims that sensation and understanding are 'united intimately' in the very moment of representation. Moreover, as Shepherd argues, our ability to quickly discern various species of sensible ideas included in compound objects, leads, by application of a causal principle, to the knowledge that outward objects are due to causes that continue to exist 'unperceived and independent, when unnoticed by the senses'. Of course, Shepherd's epistemology makes appeal to an *a priori* causal principle in lieu of space and time, and this raises the question whether we can properly construe her response to Berkeley as an argument leading from transcendental idealism to empirical realism. For Kant's *a priori* forms of intuition and categories together lead to a detailed account of the objective validity of the mathematical features in our representations of nature, and this account justifies our claim to both metaphysical and physical knowledge. Shepherd's realism points in a similar direction by means of the causal principle, but doesn't have the requisite machinery to support a similar foundation for knowledge. Shepherd may intend to supply an argument leading from transcendental idealism to empirical realism, but her transcendental idealism supports a weaker form of empirical realism, so that she is vulnerable to the charge that her argument leads back to scepticism. For it is the breadth and detail of Kant's empirical realism that lends appeal to transcendental philosophy. Still, there would appear to be little room to question that outlines of Shepherd's refutation of idealism are better revealed through comparison with Kant than through comparison to empiricist counterparts such as Locke.

Unlike Locke and other empiricists, for Shepherd, the detection of repeated patterns in sensation leads to ideas of external causes, including ideas of the external sense organs, but this detection is not tantamount to the perception of primary qualities. Rather, the detection of patterns in sensible ideas leads to the idea of an external cause, the idea of cause built into representations makes possible an application of the causal axiom, and such an application is required for inferred knowledge of the specific measurable properties of objects. The external causes of sensation can't be mere spirits, Shepherd reasons, because this would require us to

adopt a view of the action of spirits and of God, which, according to Shepherd, is unchristian and atheistic. Shepherd's own appeal to touch and the feeling of resistance is part of her attempt to defend the materiality of exterior objects, and thus establish a world of material things beyond Berkeley's spirits and Kant's more ambiguous ambiguous noumena. However unsatisfactory any defence of mechanistic materialsim may be, it is evidently this materialist commitment that motivates Shepherd's sympathy for Locke. Foundationally, there is little else in Shepherd's analysis that can be attributed to Locke. Moreover, Shepherd sees that the adoption of materialism is not itself adequate to answer Berkeley's sceptical idealism. So it is not surprising that Shepherd seeks to strengthen her reply to Berkeley by appeal to an entirely separate epistemological argument based on appeal to *a priori* ideas of causes and the causal principle. As a result of this latter strategy, Shepherd's position does appear to amount to a form of transcendental idealism. Indeed, Shepherd's reply to Berkeley and Hume, properly construed, not only avoids the problem of circularity, but succeeds in evading Kant's charge that transcendental realism leads to either to empirical idealism or scepticism.

Thus Shepherd is not a thoroughgoing continental rationalist, not a Lockean empiricist, and not a Berkeleyan idealist. Nor is she, in any strict and straightforward sense, a Scottish common sense philosopher or a Kantian transcendentalist. She clearly regards herself as making an original contribution to philosophical debate. Mary Shepherd's work thus offers a critical and original response to Hume and Berkeley that deserves the careful consideration of contemporary historians and philosophers. She is, in my estimation, the clearest and the most critically acute of the women philosophers of the modern period, with a distinctive, analytical style of criticism. She focuses her attention on careful definition and on the identification of fallacies in the arguments of her predecessors, and lays out compelling arguments against her opponents. In addition to identifying the conceptual and logical limitations of other philosophical arguments, she seeks to develop an original and plausible account of objective knowledge of the external world. Shepherd's account brings together sensible qualities, ideas of causes, and inferential processes in a way that endeavours to justify our claim to knowledge of unperceived exterior objects and their objectively real qualities, both of which derive from a world independent of the subject. The fact that our various sense perceptions converge on a single coherent account of the world is ultimately explained with reference to the marks of objectivity in knowledge and it is the marks of objectivity in sensible ideas that lead us to infer knowledge of 'exterior objects'.

One of the interesting features of Shepherd's discussion of the sciences in her shorter essays is that she is not afraid at this juncture to draw freely on her full view of causation. For in her 1824 and 1827 works, she establishes the epistemological basis for our knowledge of causal necessity. As part of that argument, she establishes the general possibility of real causation by transcendental argument and by appeal to the unity of knowledge. Thus she feels entitled to draw on the 'manner and action' of causation on the organs of sense, which presumes that and one that knowledge of a complex order supports the inference to some real existence outside of the self. Other elements in her discussion of the sciences include the unity of knowledge and the necessary status of causal laws, both of which fall under the causal principle. A final, but no less important theme is the concern regarding theism and the underlying assumption that we have knowledge of God's existence and can reject materialism forms part of her full unified account of knowledge

The variety of elements and complexity in Shepherd's philosophy make it difficult to classify her philosophical contribution. However, we can draw at least a couple of conclusions at this stage. First, that Shepherd's position falls uneasily between both empiricism and rationalism and idealism and realism. Secondly, that her philosophical contribution represents an original and

interesting effort to engage contemporary philosophical debates. It is also apparent that Shepherd's social context played an important role in motivating her work. She appears to take quite seriously Brown's charge that causation is merely phenomenal for Berkeley and Kant, and her principal aim is to show that an adequate account of causality can be effectively used to rebut both Hume and Berkeley. At a personal level, Shepherd was inspired by the case of Mr. Leslie, the Edinburgh controversy that led her to write her first book. As Blakey notes in his *A History of the Philosophy of Mind*, the view of causation espoused by Hume and Brown 'appeared to Lady Mary Shepherd to lead by an inevitable consequence to downright Atheism':[dccxc]

> When she undertook a public refutation of these erroneous notions of cause and effect, it must be remembered it was at a time when they were most rampant, and widely spread over the northern parts of Britain in particular. Every young man who came from the Universities of Scotland, attempted to show off his subtlety and academic lore, by denying there was any real causation in the world; all was mere imagination, and a piece of gross vulgar credulity.[dccxci]

Thus it was the Scottish common sense philosophers who drew Shepherd into the philosophical debate in the first place, and to the Scottish philosophers that Shepherd addressed her philosophical contribution. For Shepherd and others committed to academic freedom and university reform, this philosophical contribution developed over time in tandem with other lifelong efforts to see changes introduced to the educational system. In the end, the sciences given prominence in the universities, and academic freedom came to be the prized and protected value of proponents of an enlightened and democratic society. But, wherever the quest for philosophical truth took Shepherd in the end, the problems that she set out to resolve, and the terms through which she understood those philosophical problems, are unequivocally located in her Edinburgh roots.

Babbage Correspondence
MSS 37183
f. 204

Friday November 18, 1825

My Dear Sir,

The pressure of a recent and heavy affliction must excuse my being so explicit as otherwise I should have endeavoured to be, in the observations you flattered me so far as to request me to make on the interesting papers you entrusted to my perusal on Sunday last.

My capacity & acquirements are quite inferior to the comprehension of the greater part of the mathematical and algebraic illustrations which form much of the subject matter of these Essays, & therefore I should only betray my own ignorance by making any comment upon their nature: - Nevertheless I know sufficiently both mathematical & algebraic science, (especially of the foundations & method of reasoning employed in their analysis,) to feel myself fully capable of understanding every general appeal made to their powers, as well as competent to compare the modes of induction wrt those employed on other subjects. -

In this point of view I hope you will bear with me if I allow myself freely to make some remarks upon the general & metaphysical observations I find in these short, but useful treatises: - They will be expressed under the 3 following heads. –

First; - The objections I would make to the expression of two short paragraphs, the one on the difference between mathematical & physical induction; - the other on the difference supposed to exist between geometrical & algebraic signs.-

Second; The satisfaction I feel in the author litany in several passages (in the Essay on Induction) upon the reason whence there is a logical method of the mind in forming general inferences from particular premises, altho' these explanations be too short; altho' he seem hardly aware of their compass & importance, & does not as I think perceive that the same are also applicable to the objects of physical science.

Third - The importance of & feasibility of applying the strictest order of metaphysical reasoning to the process of the mind in its attention to every branch of mathematical & algebraic analysis. -

First. Mr Dugald Stewart has the same sentiment as our author, - when he expresses himself thus. - 'The term induction when employed in mathematics is not to be understood in precisely the same acceptation, as it is used by the followers of Bacon in 'Enquiries of Natural Philosophy.'-

I consider this notion to arise from an erroneous view of the nature of physical Cause, as tho' it were not necessarily connected with its Effects; - in opposition to the perception there is that in all mathematical & algebraic conclusions, the results are necessarily included in the relations of the stated quantities, if the operations on them be supposed correctly formed. This error is I think prevalent on account of Hume's introducing a confusion between, the detection of the presence of like cause, & the necessity of its connection with its effects, when supposed & allowed in the present - (See - Essay on C.& E. P. - 60 & note on it.) The method in which Bacon used the word 'induction', was in opposition to 'hypothesis', as the method by which conclusively to find the true operations of nature. - He ordered the mind to be 'induced' to its conclusions, by reasoning from facts brought under experimental observation. - In like manner it were in vain previous to trial, to predicate the results of the involvements of quantities; - But when tried to the mind holds them as universals in similar cases. -

The reason whence the conclusions are thus 'induced' from particulars to generals, is the same, (as it appears to me) in both cases; & the difficult part of the question recurs equally in each; namely, 'What is that reason which can render so apparently an illogical procedure of intellect, to possess a logical & demonstrative force of conclusive evidence.'. -

To explain this has the object of my 'Essay', & indeed it requires one aspect to itself in order to execute the solution of the problem after a proper manner. - To brief is to be obscure, yet it is all I can be at present -

'The mind by the faculty of abstraction perceives that individual qualities repeated are not altered in their nature by the accidents of time, place & like. - By one example we may know by the sense that 1 equal added to another equal, in 2 separate parcels, the wholes will be equal; - by reason we discern, that no accident, can ever present equals when equals are supposed to be present from being thus affected by their mutual addition. - Thus is a perception of the general nature of a quality, by one example of universal similarity!

There is thus an experiment (or experience then) of one quality to see what it is; & there is then a reasoning on the experiment to this effect, namely; 'That whatever it be, it will be an universal not affected by such accidents as interfere not with it.'

So also in physics; - Very nice experiments are needful, in order to find what qualities will arise, under the interactions of certain bodies; - but when found, one, they are found for ever; i.e. when the same bodies only are supposed to interact: for they are for all intents and purposes merely the same things repeated, - & must necessarily therefore be similar & not different as effects; be objects of necessary qualities, not of contingent qualities or effects.-'

I grant that the detection of the presence of like qualities is much easier in those of arbitrary quantities, than in any other subject, because we ourselves form them, & name them. - Every thing is what it is by its' formation, and however nicely we observe nature it is true, 'her secrets are beyond our grasp; '- Still, this is another part of the question; - and I shall not enter upon it here; - Suffice it to say that the authors who object - to induction in physics being of the same force in its conclusions as those of a mathematical nature, always consider fire as fire - water as
water - man as man - & the mistaken views arise from an ignorance rather of the nature and manner of cause as a productive principle, and as necessarily in, and with its effect; not from any supposed inability in the use of the senses to detect the presence of like cause; when, to my mind, a rational scepticism arises. - Upon this part of the question I have a separate chapter in my Essay, but it is too short, hasty, & inadequate - at P. 99.

Mr. [Telford] has a little diagram representing the inference of the mind from sensible qualities (the effects) to exterior causes, with remarks to show its latent process of reasoning in order to detect like objects present or the contrary which, tho perhaps puerile, is an 'artifice' for explanation which your friend might not wholly despise - But this part embraces the whole of the Berkelean theory, - that nothing to do with the demonstrative evidence for universal & future conclusions from particular experiments on bodies, when made to interact on each other, as examples of the qualities, & effects of such bodies when again supposed present. In mathematics and physics equally, unless a reasoning occurs on experiment which shows nothing can arise to interfere with the qualities or quantities, the inductive reasoning is not demonstrative - Perpetual recurrence thereby does not amount to proof It only amounts to a proof there is a cause as general and present as that recurring effect; & that as there must be a reason or cause for such frequency of recurrence so it may have a still further range.

But here physical analogies have the advantage over those which relate to quantities - because the slightest unexpected alteration in the involvements of any quantity will [tend] to spoil the analogy, & all its results. -

But in the grand operations of nature, her intentions & ends are ever farther into the account, & bread is supposed to be truly bread when formed by apparently similar materials (& hence fitted to nourish) not because of the impossibility of imperceptibly injurious particles creeping in, but because nature's regular neatness in ordering it otherwise must have as regular a cause, and that cause appears her designing care for us in which she cannot be supposed to intend to fail.

Saturday

The next passage I would allude to is the following. 'The reasonings employed in geometry and algebra are both of them general, but the signs which we use in the former, are of an individual nature, whilst those which we employ in the latter, are as abstract as any of the terms in which the reasoning is expressed.'

Now I hardly accede to this distinction between algebraic & geometrical signs; I think they must both of them be considered as abstract signs, or neither of them be so considered. - For my own part I conceive it a contradiction to suppose any 'sign' whatever can possibly have the quality of abstraction predicated of it; because by its very nature it is an individual. That only can be an abstracted quality which has formed or can form first part of a complete object; - Therefore a sign is but an individual example, a substitute for a quality which may be more or less a general quality.

There appears to me to be this difference between the sign use in algebra, & that in geometry; in that the sign used in algebra being unlike the thing signified, (& therefore open to any arbitrary definition;) may represent an idea the most universal & abstracted; whereas a geometrical sign being a resemblance of the thing signified, (that is of the individual of any given specie,) can represent no idea more abstract than the common qualities of a species.-

I would conclude therefore thus.

The geometrical sign is a particular sign of general similarities to it; - The algebraic sign, is a particular sign of any quality whatever; -

therefore that

The conception of the geometrical universal, to which the sign relates, is more limited than the algebraic universal to which its sign relates, but not the sign itself more limited in the former case, than in the latter; - the signs in each being equally individuals; & in each, are the examples of all imaginable similarities signified by either.

Sunday Nov 20

Second - The remark on page 17 'On Induction' contains in my opinion the true, the only reason which ought ever to make the mind draw a larger conclusion than that contained in the premises - 'The reason which compels our assent' (to an universal induction 'from a certain number of recurrences) 'appears to be that we cannot discover any new cause, which may come to play in the higher powers, which shall disturb that regularity - that is apparent in the former ones.' - This observation is I consider of exquisite nature, and would in my humble opinion, if believed in all its bearings, & allowed its utmost latitude of consequence, considerably alter the whole metaphysical and physical reasonings of modern philosophers. - Excuse me if I say, that I do not think your friend himself perceives its full force for he goes on 'Had the experiment been restricted to prime numbers, so small a number of co-incidences would hardly have satisfied the most careless enquirer'- I consider that ever so frequently recurring co-incidences would not satisfy a logical much less a sceptical enquirer, if the relations of the quantities so recurring did not evince that the reason of the appearance was such, that it must necessarily arise among other powers supposed; the difference of their

qualities being such as could not interfere with the phenomenon in question. - When such a reasoning can occur, one example is enough: when it cannot it does not appear to me that a million of co-incidences can positively answer for more than themselves. Of the value of such reasoning to a certain degree your friend must however be aware, because he applies it in all its being at page 8 & 9 - After showing the reason, why a certain phenomenon takes place in a given column of figures, he applies it universally. 'This reasoning (says he) may easily be applied to all the succeeding vertical columns, & hence we deduce the conclusion; that if any given combination of figures occur in the first period they will be repeated indefinitely at stated intervals;

Yet of the full importance of such reasoning & such application of it, he hardly seems to be acquainted, because he himself allows (p. 7) that 'To state with precision the reasons which influence our judgments of these degrees' (of probability) 'would greatly add to the value of this instrument of investigation' - (i.e., induction from particular facts); but the difficulty of accomplishing this is great'-

Now it appears something presumptuous in an unknown person, to suppose the difficulty less than that which the newfound mathematician I cope with supposes; yet I cannot avoid suggesting a hint on the subject.

1st Frequent occurrence of similar phenomena influences our judgment to expect similar phenomena without a full proof of its necessity to arise, because there must be some reason for such a recurrence, & among the differences of the future qualities supposed, if no circumstance occur to the mind as probable to interfere with the cause for the given phenomenon, in like degree will the judgment be influenced in its expectation. - The more frequent the recurrence of one particular circumstance amidst qualities changing in other respects, the higher also will the probability become of the same occurring amidst other analogous changes; because it is thereby shown such do not affect the cause for it - and when any changes do not appear analogous, yet if the mind thinks she perceives they cannot affect the cause, so will be its expectation, but

2dly This method of the mind only amounts to full proof, when the cause of a particular phenomenon is distinctly discerned, & when it perceives that no other changes of qualities supposed, amidst those which remaining the same can affect their relations & their results in consequence:- Thus, if by trying in the multiplication table I find - 1 times 2 = 2 and 2 times 1= 2; and so on with the multiples of 2. - I could not have much data for concluding from 12 co-incidences, that 144 have taken place of a similar nature, with respect to the multiples of 12 objects; - Yet there must be a reason for these 12 co-incidences - and as each operation upon every subsequent object, was similar in its bearings, so the reason (altho supposed undiscernible) would, by appearing not to be affected by the nature of the object, because of a large application. - Still, there would now arise a ratio proof for the succeeding deficit, as it might be impossible to discover, whether some alteration of the qualities occurring, would not interfere with its application; altho' the probability for the number 12, would be 12 times higher than for the number 2; - whilst the intervening numbers would be under a probability after the same [assertion] - But when the reason for the phenomenon alluded to

be either known, in one example, or it be perceived that whatever it may be (if supposed unknown) no qualities among the remaining numbers can interfere with it, - then demonstrative proof arises; - for demonstration is nothing more than the clear perception of a universal relation.

Third - Of the use of finding the metaphysics of mathematical & algebraic science, it is impossible not to perceive your friend is fully aware, & not to be filled with admiration at the undertaking.- If the process of the mind is discovered in its reasonings & conclusions, and probable judgments arise in these séances, it will afford I trust an example whence may be induced better rules & methods than we possess for the advancement of every other. - Tho' I cannot understand the illustrations yet I perceive their drift & bearings; - the subject appears to me equally novel & interesting. - With respect to its application to physics; you know my opinion; & I can truly say that from a very early age, I have examined my thoughts, as to its manner of reasoning in numbers; and from time to time have applied such notices to other reasonings, either for amusement or improvement; - indeed chiefly in order to chastise the vague, illusory, illogical method of reasoning admitted with every part of discourse, whether gay, or serious, & into each department of literature however important its object.-

I am very sincerely yours,
M. Shepherd

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Babbage Correspondence
MSS 37188
f. 121

[1832 or 31]

Lady Mary Shepherd

Dear Sir

I am delighted that Ladies are allowed to subscribe - I shall be too happy to do so. Unluckily I am engaged next Tuesday I fear till past 2 o'clock: but that need not hinder the subscription. I accept with gratitude your offer of managing the detail - Beg pray do so for me - and I will refund the money - I will call on you to pay for it. I have studied so much in Mr. Lyell's book that all he said was quite familiar to me & easy to be understood as consistent with his principles - The maps were beautifully illustrative of the whole. - Yet I cannot believe upon any evidence other than demonstrative, that there could be such an uniformity not merely of the laws; but of the facts or events in nature. That these [being] supposed sufficient land &, which man might occupy, that no man occupied the same, : - and that for ages. - Show me the world in impressure and not under analogous change maybe, & then 'I might believe,' however long & various might have been the changes our planet might have undergone: - Also, I do not see why the [remaining] rocks should not hold as much granite as those in [hills] surrounding.-

Mary S.

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Babbage Correspondence
MSS 37201
f. 432

[1832]

Charles Babbage Esq.

My dear Sir

Professor Leslie says that Biot and Humboldt assign for both magnetic poles the opposite latitudes of 79 [degrees] 1' the longitude of the northern being 27 [degrees] 37' and that of the southern 205 [degrees] 12' west from Greenwich. The plane perpendicular to the magnetic one he says intersects the Equator at an angle of 10 [degrees] 59' and in west longitudes 117 [degrees] 37' and 300 [degrees] 27'. But it appears that in 1824 Captn Lyon found the magnetic pole was in latitude 63 [degrees] 26' and 51" and in 80 [degrees] 51'25" west long. pray what is the true faith?

Yrs truly M.S.

Lady Mary Shepherd

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Babbage Correspondence
MSS 37189 ff 297

C. Babbage Esq.
With Lady Mary Shepherd's Compts

		49	7
		240	
		289	17
	diff 200	440	
		729	27
2nd diff	200	640	
		1369	37
3rd diff	200	840	
		2209	47
4th diff	200	1040	
		3249	57
5th diff	200	1240	
		4489	67
6th diff	200	1440	
		5929	77
7th diff	200	1640	
		7569	87

8th diff	200	1840	
		9409	97
9th diff	200	2040	
		11449	107

Dear Mr. Babbage

I want to know if your machine could work out the sums of the square numbers following the law as given above – viz. - Every square number ending after the square of 7 in the units is = + 240 + 200 for every adl ten in the root - + 49 - ad infinitum - I am very desirous to know, because I think it has by the knowledge of this law mixed with the observation that every square offers a corresponding change & regular order in the place of the tens, as -, 4, 8, 2, 0, with analogous laws in every other sqr number which has the sense of the American phrase being said, to know roots by inspection -

Yours always M Shepherd

Henrietta St . [Cav. Sq]
Monday - Feb 8 1836

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Babbage Correspondence
MSS 37189 f. 383

C. Babbage Esq.
No. 5 Devonshire St.
[B--and] Place

Tunbridge Wells
[Tuesday --strikeout] Monday
July 10th 1836

My dear Sir

I have got a sweet house 'Durham House', with a spare bed, a little boudoir you may have to yourself, if either you & Mrs. Babbage together, or yourself will come down Saturday or Sunday next and stay a few days or a week, or as long as she or you likes. - Pray say you will - It will do you both good - I do not ask Mrs. B- out of mere compliment; I know that I shall talk philosophy with you a good deal but we shall have the long chaise, & a piano forte - and tea in the parlor, & then we should amuse and please you with Mary's assistance -

We are all busy in algebra - I have begun to do it regularly - The more I have considered the last view I took of the roots of -- Quantities, the more I am convinced of its being the correct one.-

In that manner it is fraught with meaning & instruction concerning the proportional error in the data contained in the question; - whilst also it keeps to the analogy expressed by the roots of other algebraic quantities, as well as that in like manner with them they can be first translated into mathematical language, & 2dly applied to concrete things - without which perception of ideas under the terms of calculation, there could not be any security in their results.

Pray come & pay me a visit & believe me yours most truly,
M. Shepherd

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Babbage Correspondence
MSS 37201
f. 435

Henrietta St. [torn]
Feb - 4 [1839]

To C. Babbage Esq.
1 Dorset Street

[seal]

Dear Mr Babbage

I am almost afraid that you should think me either ungrateful, or indifferent to your kindness in inviting me two of your agreeable soirées; whereas truly, I am neither one or the other; on the contrary, altho', the serious affliction [torn] lately experienced, something indisposes me, to receiving the same pleasure, I had used to do in general society, yet I know not any house, where I should have sooner liked to have diverted my mind from something of its habitual seriousness than at yours; But having suffered this severe season, frequent returns of cough, I felt afraid of venturing out into the very cold wind of yesterday evening, after the warmth of a large fire in the D. room. Mr Shepherd was suffering severely from a cough, or would have gone to you with great pleasure.

I remain very faithfully yours
M Shepherd

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Babbage Correspondence
MSS 37201
f. 433

Charles Babbage Esq.
No. 5 Devonshire St.

[Argyl] St [---]

My dear Sir

I hope I do not betray an unpardonable vanity in requesting your acceptance of this little volume. I do assure you my motive for offering it to you is not merely that I may thereby chance to gain you a my convert by affording to you a ready reference, to some arguments which favour my notions of induction, causation, [etc] but chiefly as a small testimonial of the high gratification I felt in being permitted to peruse & observe upon your papers, & in being considered as in any degree qualified by you to apply the doctrine of this little volume to such abstruse enquiries, where to say truth they come into play more as I conceive than yourself as well as the generality of philosophers at present suppose. I have ventured to open the leaves in order to come on the passage - page 85 - (* see also pp. 77, 91) as an instance of that latent reasoning used in experiment by which it comes to be an example of all future, or other instances of a like kind & in which point of view an exact experiment in physics (supposed) becomes precisely analogous, to any example used in [for] proportions in mathematics or for results in algebra. -

I shall hope to see you tomorrow, when however we must be a little diverted from the grave to gay

until then I remain
very sincerely yrs
MS -

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Babbage Correspondence
MSS 37201
f. 437

[c. 1839-40]

To Charles Babbage Esq.
Dorset Str
Manchester Sq.
No. 1

[seal]

Dear Mr. Babbage

I fear that you must think me very impolite in not having apologized ere this for my absence & Mr Shepherd's at your intellectual banquet on Saturday last - The truth is that my spirits & time have been much engrossed by the sudden illness of Sir Sam - Shepherd. I was too depressed on Saturday to enjoy the thought of going to you - Sir Sam is now thank God, I believe and hope out of danger - but Mr Shepherd went off immediately on hearing the news, and is still in Berks.

I read a great on Sunday in your Bridgewater treatise w. a new & increased delight. –

The chapter on miracles appears to me as beautiful, as the mechanical instrument which serves as its illustration. That on the Mosaic history, is to my faculties somewhat obscure - I read it twice over, and am not sure that I yet quite catch the full meaning of some of the reasoning. How I should enjoy a talk on it - wt. you.

Yrs. ever faithfully
M Shepherd

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Babbage Correspondence
MSS 37192
f. 428

My dear Babbage

I have just learned from Sir James [South] that you are still in town - I wish if you are disengaged you would come down to us for a few days. If you leave town by the 4 o'clock Reading train the day you receive this, I will meet you at Reading and bring you here - or if you

should now be engaged, we shall be happy to see you at any other time upon giving us a few days notice -

Yrs very sincerely
H J Shepherd

August 14 1843
Crowsley Park
Henley on Thames

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Babbage Correspondence
MSS 37193
f. 105

Dear Babbage

We should be delighted to see you and Ryan on Saturday next -

Yours very truly
H J Shepherd

Crowsley Park
Henley on Thames
Aug 16 1844

Footnotes

[i] Do not work on these footnotes for now. Consider making revisions that will eliminating them entirely. Robertson, 229.
[ii] Brandreth, 26.
[iii] Brandreth, 28-29. [Naturally, I would like to find these.]
[iv] Brandreth, 31-32. Mr. Stockdale accompanied the Primrose brothers to Cambridge.
[v] Church of Scotland, *Report of the Proceedings and Debate in the General Assembly of the Church of Scotland, Respecting the Election of* Mr *Leslie to the Mathematical Chair in the University of Edinburg* (Edinburgh: James Ballentyne, 1805), 6. Hereafter cited as Report.
[vi] Emerson, 10. This is George Wishart's description of Hume's philosophy.
[vii] Report, 6.
[viii] Report, 33.
[ix] E. C. Mossner, 'Philosophy and Biography: The Case of David Hume', in V.C. Chappell. ed., *Hume*, (University of Notre Dame Press, 1968), 8. Hume suffered a similar defamation of character. Samuel Johnson called him a rogue, a blockhead, and a liar, and John Stuart Mill said of him that 'regard for truth formed no part of his character'.
[x] Report, 143.
[xi] Brown (1805), 10.
[xii] Brown (1805), 14. Brown rejects certain aspects of Hume's argument. He claims, for example, that we are in fact able to draw conclusions about cause and effect after only a single trial. The boy who is stung by a bee, Brown maintains, does not wait for a second or third application before he fears the sting. Brown also rejects Hume's claim that the belief in causal connection depends on frequency of conjunction or vivacity of impression. See page 19.
[xiii] Willich (1798b), vol.II, viii-ix.
[xiv] Shepherd (1824), 46-49.
[xv] Shepherd (1827), xv.
[xvi] Mary Shepherd, *An Essay upon the Relation of Cause and Effect Controverting the Doctrine of Mr. Hume Concerning The Nature of that Relation; with Observations upon the Opinions of Dr. Brown and Mr. Lawrence, Connected with the Same Subject* (London: T. Hookham,1824). Hereafter cited as Shepherd (1824). *Essays on the Perception of an External Universe and Other Subjects Connected with the Doctrine of Causation* (London: John Hatchard and Son,1827). Hereafter cited as Shepherd (1827).
[xvii] In addition to these books, Shepherd wrote two short pieces that were published in 1828 and 1832. She may also have written a third philosophical treatise, a teaser suggested in both the *Dictionary of National Biography* and a curious typewritten insert left in the Cambridge University copy of her 1827 publication. The third work attributed to Shepherd, entitled *An Enquiry Respecting the Relation of Cause and Effect*, is a bit of a mystery. Unlike the later works, the 1819 piece was published in Edinburgh together with a second, very different, work on natural history. Although consistent with the arguments of her 1824 and 1827 books, the 1819 work contains little that can be directly related to Mary Shepherd's original views. As a result, Shepherd's authorship is difficult to establish in the absence of further evidence. The work in question was published anonymously in 1819 under the full title *Enquiry Respecting the Relation of Cause and Effect: In Which the Theories of Professors Brown, and Mr. Hume are Examined; and With a Statement of Such Observations as are Calculated to Shew the Inconsistency of These Theories; and From Which a New Theory is Deduced, More Consonant to Facts and Experience. Also A New Theory of the Earth, Deduced from Geological Observations* (Edinburgh: James Ballentyne, 1819).The two articles published as part of a philosophical exchange with John Fearn are, Mary Shepherd, 'Observations on Mr. Fearn's *Lines of the Human Mind*', in E.H. Barker (ed.), *Parriana: or Notices of the Rev. Samuel Parr, L.L.D.* (London: Henry Colburn, 1828), pp. 624-27. Hereafter cited as Shepherd (1828). Mary Shepherd, 'Lady Mary Shepherd's Metaphysics' in *Fraser's Magazine for Town and Country*, vol. v, no. xxx (July 1832), pp. 697-708. Hereafter cited as Shepherd (1832).
[xviii] Historic Doubts, 29.

[xix] Historic Doubts, 53. Whately added a postscript to his third edition, published shortly after the announcement of Napoleon's death. There, Whately adds an argument to the effect that that the probable case of suspicion that he has established regarding the life of Napoleon gives grounds for the supposition that Whately himself *killed* Napoleon.

[xx] Alexander Campbell Fraser, Archbishop *Whately - The Restoration of the Study of Logic*. *Lecture Delivered Nov. 3, 1863* (London: MacMillan and Co., 1864), 40.

[xxi] Shepherd (1824), 108.

[xxii] Shepherd (1827), 131.

[xxiii] Shepherd (1824), 129.

[xxiv] Shepherd (1824), 44-46.

[xxv] Shepherd (1827) 30-1.

[xxvi] Shepherd (1827) xii and xiv.

[xxvii] Shepherd (1827) xiv.

[xxviii] Shepherd (1827) 189.

[xxix] Shepherd (1827) 390-1.

[xxx] It is worth remarking that Shepherd's major publications achieved a certain level of critical acclaim in her day. William Whewell is reputed to have used one of her books as a text at Cambridge and he made inquires for any unpublished manuscripts that she might have after her death. Robert Blakey includes a summary of Shepherd's views in his *A History of the Philosophy of Mind*, and expresses both admiration and astonishment regarding her philosophical achievements. This sense of appreciation is echoed in Charles Lyell's claim that Shepherd was an 'unanswerable logician, in whose argument it was impossible to find loophole or flaw.'
Robert Blakey, *A History of the Philosophy of Mind*, vol. ix (London: Longman, Brown, Green, and Longmans,1850), 39-46 and 609-10.

[xxxi] Blakey, p. 42.

[xxxii] Blakey, 43.

[xxxiii] Napier, 23.

[xxxiv] Thomas Macaulay, 'Utilitarian Logic and Politics' in *Edinburgh Review*, vol 49, no. 98, 159-189 (March 1829), 185. Hereafter cited as Macaulay.

[xxxv] Macaulay, 188.

[xxxvi] Macaulay, 188-9.

[xxxvii] Brown, Thomas. *The Paradise of Coquettes*, (London: John Murray), 1814, ii.

[xxxviii] Mary Elizabeth Brandreth, *Some Family and Friendly Recollections of 70 years, of Mary Elizabeth Brandreth, widow of Henry Rowland Brandreth, etc*. (Westerham: C. Hooker, c.1888), 30. Hereafter cited as Brandreth. Mary Primrose spent most of her formative years at Barnbougle, with annual visits to Bixley Hall, in Norfolk, and occasional visits to London.

[xxxix] [check county lines] In the painting, Neil Primrose could well be pointing toward an ancestral home. Early statistical records concerning the Primrose family show that Henry Primrose (b. 1490), the first recorded ancestor, and his immediate descendents, were associated with 'Culross', the name of a village in both Fife and Perthshire. Culross, Fife was the site of a Cistercian Abbey, a Benedictine order known for the remoteness of its abbeys, and a lifestyle of farming, prayer, and study. The family name seems to derive from the lands of Primrose, near Inverkeithing -- lands associated with a Benedictine Abbey in Dunfermline, Fife. There is some ambiguity regarding the county, however. A few vital statistics records for the Primrose family list a location of Culross, Perth. The vast majority of the records for the family and its branches record the location as Culross, Fife. An ambiguity or change regarding a county border, a recording error, or the repetition of the place name 'Culross' by a family member could all explain the discrepancy.

[xl] Scotland's Online Gazeteer for Dalmeny. For information on Barnbougle Castle, see Lady Dierdre Rosebery, *Dalmeny House* (Broxbum: Alna Press). [Look for Mowbray family history.]

[xli] Four centuries after the original charter was transferred, Barnbougle was still referred to by some as 'the home of the Mowbrays'.
See Graham Holton. *Some Notes on the History of the Parish and Church of Dalmeny*. (Edinburgh: Privately printed, c.1980), 5. Hereafter cited as Holton. Holton writes that, 'Until the 19C, the [Primrose] family continued to live in Barnbougle Castle, the home of the Mowbrays, situated on the shores of the Forth.

[xlii] Thomas Robertson, 'Parish of Dalmeny' in *The Statistical Account of Scotland Drawn Up from*

the Communications of the Ministers of the Different Parishes, vol. I, pp. 227-242, John Sinclair, ed. (Edinburgh: William Creech, 1799). Hereafter cited as Robertson, 239. Hereafter cited as Robertson. James Scott's article on Dalmeny in the statistical account of 1845 repeats the story. See also James Scott, 'Parish of Dalmeny' in *The New Statistical Account of Scotland by the Ministers of the Respective Parishes, Under the Superintendence of a Committee of the Society for the Benefit of the Sons and Daughters of the Clergy,* vol. II, pp. 90-108 (Edinburgh: William Blackwood, 1845). Hereafter cited as Scott.

[xliii] In Celtic, Barnbougle means 'the point of victory of strangers'.

[xliv] Robertson, 239.

[xlv] For example, the first of Dalmeny's Ministers recorded in the *Scots Fastii*, John Frude is descibed as a supporter of the 'reformit kirk'. He was 'complained upon' by the local Episcopalian Bishops of Dunkeld and suspended in 1566.

[xlvi] I am presuming that this detail from the *Scots Fasti* entry for Dalmeny, p. 200, is correct, although King James VI would have been about fourteen years young in 1580.

[xlvii] This period of tension follows after the so-called breaking of the apostolic line of Episcopalian Bishops in 1560, the repeal of Episcopacy by the Scottish Parliament in 1592, and the renewal of the apostolic succession, which was legalised by an Act of Parliament. The restoration of the Bishopric involved the consecration of three Scottish Bishops by four English Bishops 'in the apostolic line'. See Marion Lochhead, *Episcopal Scotland in the Nineteenth Century* (London: John Murray, 1966), 14. Hereafter cited as Lochhead.

[xlviii] Thomas Hope is the ancestor of the Hope family of Hopetoun. In Morgan, p. 104, a record of 4 May 1625 refers to Hope as 'Thomas Houp of Craighall, advocat', so it appears that Hope family purchased the property of Craigiehall, which is adjacent to Dalmeny. In some vital statistics, Craigiehall is listed in Fifeshire -- perhaps reflecting the same sort of county border confusion as the one underlying the Primrose records of Culross, Perthshire.

[xlix] Scott, 95. See also W.l. Colvin, 'Parish of Cramond' in *The New Statistical Account of Scotland by the Ministers of the Respective Parishes, Under the Superintendence of a Committee of the Society for the Benefit of the Sons and Daughters of the Clergy,* vol. I, pp. *** (Edinburgh: William Blackwood, 1845) 598.

[l] Photocopy from a Gazeteer, EPL, 339. Problems relating to local religious divisions evidently persisted. Years later, a Dalmeny Minister by the name of John Drurie, is commended for being a 'learned divine and would-be uniter of divided churches'.

[li] Fraser, 122-3.

[lii] *La Vie de Gilbert Primerose*. *Ministre du Ciquiesme Evangile a Belge*. MDCXX1. This volume describes the various life and work of Gilbert Primrose during his service in France and describes the suspicions and circumstances that led to Gilbert Primrose's banishment from the country.

[liii] The intellectual impact of the discovery of the New World was profound. The discoveries of the explorers showed that the previous understanding of the nature of the earth was wrong, and that a whole world existed outside of Judeo-Christian history.

[liv] Copernicus had dropped the assumption that the planets and sun revolve around the earth in favour of a solar system model, he held fast to the assumption that the planets moved in perfectly circular orbits in regular, uniform motion. The assumption of perfectly circular orbits was, according to the Greek thinker Simplicius, originally set out by Plato, and so had long been granted as a stating point in astronomical theory. Thus, Copernicus nonetheless claimed that his theory was mathematically superior to its Ptolemaic rival, although it was not.

[lv] Kepler's laws were discovered on a model of elliptical planetary motion, and discredited the notion that the planets moved in perfectly circular paths at constant velocities. His success rested on access to the enormous observational data collected by Tycho Brahe and himself. His view was that that the book of nature is written in mathematical characters by God, the Great Geometer, and thus, that the key to it all could only be found by discovering the mathematical laws of the cosmos.

[lvi] Bacon denounced the worship of ancient wisdom as resting on fallacy: If reverence is due to age, then we should revere ourselves. The so-called ancients lived when the world was young, and in contrast to them, it is we who are truly the old ones. For, we have the wisdom of the ages behind us.

[lvii] In [15--], Mary Queen of Scots visited the Scottish universities in order to assess the state of higher education in Scotland.

[lviii] Alexander Morgan ed., *University of Edinburgh: Charters, Statutes, and Acts of the Town Council and the Senatus, 1583-1858* (Edinburgh: Oliver and Boyd, 1937). Hereafter cited as Morgan. In 'Part I: Charters anent the College, and Act of Ratification by the Scottish Parliament' of Morgan, the full history of the charters is given, including evidence of the patronage of Queen Mary.

The order of charters and related events is as follows: 1. Charter by Queen Mary 13 March 1566-7; 2. Charter of Confirmation and Novodamus by King James VI 14 April 1582; 3. Charter by King James VI uniting the benefice of Currie to the College 4th April 1584; 4. Charter by King James VI, 7th August, 1612; 5. Ratification by the Scottish Parliament, 4th August 1621. For additional information of Queen's Mary's original charter, see Morgan, pp. 2-5. The lecturers, Alexander Sym and Edward Henderson, taught civil law, canon law, Greek, and other sciences. See D.B. Horn, *A Short History of the University of Edinburgh 1556-1889* (Edinburgh University Press,1967), 3. Hereafter cited as Horn.

[lix] Horn, 3. The original college resembled the Collège de France, founded at Paris by Francis I a few years earlier.

[lx] Much of the drama associated with the Scottish Reformation can be linked to conflicts between Mary Queen of Scots and the Presbyterian Minister, John Knox -- conflicts that took place in Edinburgh. Queen Mary was eventually subverted. In 1566, her suspected lover, David Rizzio, was murdered in front of her. In 1567, Queen Mary's husband, Lord Darnley, was murdered in the college chambers, and Queen Mary was implicated in his murder. She was then forced to abdicate.

[lxi] On p. 84 of Morgan, there is an anti-Catholic article passed by the Town Council, dated 23rd April 1561:

The articulia following proponit to the prouest baillies counsale and dekynnis for the commoun policie of this burgh, quhilk thay ordane to be registrat:-

Item in the first, it is thocht gude that the renttis annuellis and utheris emolimentis quhilkis of before war payit furth of landis and tenementis within this burgh to papists, priestis, freris, monkis, nonis, and utheris of that wikit sort, for manteinying of idolatrie and vane superstitioun, seing it hes plesit the Almychtie to oppin the eis of all pepill and to gyf thame the knaulege of sic vane abuissis, Thairof that the saidis renttis and emolimentis by applyit to mair proffitable and godlie uses, sic as for sustenying of the trew ministerris of Goddis word, founding and biging of hospitalis for the pure, and collegis for leirnying and upbring of the youth, and sic uther godlie warkis.

[lxii] Perhaps the most notable critic of Scholasticism was Erasmus, an early humanist and one of the most influential figures of his day. One of his most important works was a translation of a Greek version of the New Testament, which differed in important respects from the version that had been previously been available in Latin. Knowledge of Greek was rare, even rarer than the knowledge of Latin outside of clerical circles, and Erasmus's work showed a big difference between the Christianity of the early Church and that of the Church of Rome ca. 1500. For example, he discovered that the passage in *John* supporting the doctrine of the Trinity did not appear in the earliest Greek versions of the Gospel. But rather than attacking the Church or particular Church doctrines, Erasmus's book, *In Praise of Folly,* ridiculed the intellectual and moral world built up to support Christendom -- namely, Scholasticism. As such, Erasmus did not undermine Scholasticism by disproving its tenets, but by making it appear silly. To this day, it is his picture of Scholasticism we have in mind when we imagine bizarre intellectuals debating such questions as 'How many angels can stand on the head of a pin?' Following Erasmus, intellectuals began to devote themselves to scholarship and radical innovations in theology. These innovations led to the emergence of Protestantism under Luther; hence, the saying that, 'Erasmus laid the egg that Luther hatched.' The work of Erasmus inspired and popularised the humanistic rediscovery of the past, i.e. ancient Greece and Rome. Plato, Plotinus, and Aristotle had all influence medieval thought, but now they were rediscovered as *Greek* thinkers, rather than as material for theological debates. As part of this revival, it was discovered that there existed a whole host of Greek thinkers whose work had been ignored; there were non-Judeo-Christian views of the good life, the nature of morality, of reality and of the limitations of the human subject as 'knower'. Stoicism, Epicureanism, and Scepticism, as well as classical mathematical and scientific work, were hardly known in medieval Europe, and all re-entered European intellectual discourse. Of the classical philosophical movements, perhaps the most important was Scepticism. The major text of Greek Sceptical thought -- the writings of Sextus Empiricus -- were published in Latin translation in 1562 and again in 1569. Dropped in the midst of the crisis of belief produced by the shock waves of geographical and humanistic discovery and rediscovery these writing initiated a sceptical crisis that culminated in religious Reformation and Counter-Reformation. Seizing on certain arguments of Sextus, writers such as Michel de Montaigne and Francisco Sanchez attempted to erode every level of belief and certainty. Montaigne stressed the vast differences of opinion on all subjects between the ancients and his contemporaries, and amongst his contemporaries. Our means for dealing with this, our senses and our reason, he argued, are both unreliable measures of the world around us. Indeed, senses vary according to surrounding conditions, and our reasoning may depend on questionable

initial premises. In the face of this, Montaigne recommends that we follow the advice of Sextus -- suspend judgement on all things that go beyond appearances, and live morally by following nature and custom -- but adding that we ought to accept fully the faith God gives us.

[lxiii] *DNB* entry on Andrew Melville.

[lxiv] Melville was considered to be one of the most able and learned of his countrymen, even after he got himself into trouble for his outspoken criticisms of the King's involvement in ecclesiastical affairs. He did eventually escape his prison sentence, but only in consequence of a deferential public gestures such as his conciliatory and flattering verse in honour of the King and an apologetic letter to the Privy Council. Few were as skilled in the art and uses of flattering rhetoric as Gilbert Primrose DD. It seems likely that the panegyric savvy of individuals such as Gilbert Primrose helped Melville to win back his freedom. Melville, who had branded the moderate agenda as a return to Papism and declared King James VI to be 'God's Sillie Vassel' was suspicious of and refused to join the moderate cause. Through the intervention of the moderates, such as Primrose, Melville, was brought into the French Reformed Church,
which was doubtless much too theologically liberal for his own tastes. [His release was purchased at the price of exile to France, a fate that would inhibit Melville from exerting a direct influence in Scotland Did he seek revenge for this last sentence?]

[lxv] King James had requested that the college be named after him. The honour was in practice denied him. The College came to be referred to as 'Tounis College' and 'Edinburgh College' rather than 'King James Sixth's Academy'.

[lxvi.] It is notable that the inaugural event for the College was a bizarre affair. The local scholars are said to have demonstrated a very limited range and depth of scholarship and King James VI is said o have responded with a series of word plays on the names of the speakers, both showing up and making light of the scholars and their presentations.

[lxvii.] 'Beginning in the later years of James I and then carried through under Charles I, Armenianism dominated the church to the extent that in 1626 when Buckingham was appointed chancellor of self-consciously orthodox Cambridge, the teaching of predestinarian doctrine was prohibited.' See [author/title] in David George Mullan, *Episcopacy in Scotland: The History of an Idea, 1560-1638* (Edinburgh: John Donald Publishers Ltd, 1986) 167. Hereafter cited as Mullan.

[lxviii.] For such moderates, the goal of reform was weakly interpreted as a religious revival 'in which all christians should participate without quitting the communion of the church universal'. Indeed, these moderates claimed that the Reformation had not resulted in a new religion, but in 'a return to primitive christianity'. Mullan ,166. See Mark Pattison, *Issac Casaubon 1559-1614* (Oxford, 1892) 448.

[lxix.] Mullan, 167. Mullan's original reference is from William Laud, *Works* (Oxford: 1847-1860) III 341.

[lxx.] Mullan 167-8.

[lxxi] Need to research the Privy Council details.

[lxxii] *God and the King: Or, A Dialogue shewing that our Soueraigne Lord King James, Being immediate under God within his Dominions, Doth rightfully claime whatsoeuer is required by the Oath of Allegiance*. London: Imprinted by his Majesties speciall Privelege and Command, to the onley use of Mr. James Primrose, for the kingdom of Scotland. 1616. Preface, A3. Hereafter cited as God and the King.

[lxxiii] God and the King, 2.

[lxxiv] God and the King, 2- 3.

[lxxv] God and the King, 3.

[lxxvi] God and the King, 20-25. Ironically, King James justifies the introduction of his Oath by appeal to the precedent of the Seventh Century Oath which was to become the backbone of the 'Spanish Inquisition', which is associated with a period of gross violations of human and civil rights – and, in particular, the persecution of heretics and Jews. It is not clear whether this appeal was intended as an appeal to fear. It certainly suggests that a sorry fate would await those such as the 'Popish Lords' said to have engaged in treasonous plotting with King Philip of Spain and who might otherwise have been tempted to encourage subjects to refuse to take the oath.

[lxxvii] Note that this is the very sort of rhetoric upon which Gilbert Primrose based his reputation.

[lxxviii] God and the King, 14-15. Contemporary historians have raised the question of whether blame was correctly laid in this instance.

[lxxix] This is the father of Gilbert Primrose, DD.

[lxxx] Gilbert Primerose. *Jacob's Vow, opposed to the Vowes of Monkes and Friers, The first Volume in two Bookes; of the Holy Scripture, And Evangelicall Counsels*. Written in French by Mr. Gilbert Primerose, Minister of the Word of God in the Reformed Church of Bordeaux and Translated into English by John Bulteel, Minister of the Gospel of Jesus Christ. London: Printed by Felix Kyngston for Nathaniel Newberry, and to be sold at his shop under Saint Peter's Church in Corne-hill, and in

Pope's-head Alley, 1617, C2. Hereafter cited as Jacob's Vow.

[lxxxi] Jacob's Vow, Book I, Chap VII, 37.

[lxxxii] Gilbert Primrose, D.D., *The Righteous Man's Evils and the Lord's Deliverances*, London: Nathaniel Newberry, 1625, A3. The rhetorical skills of the Primroses, and especially of Gilbert Primrose, were tremendous. In his various panygeric works, Gilbert Primrose more or less defines such roles as royal counsellor, Prince, King, subject, etc..

[lxxxiii.] *DNB* entry on Gilbert Primrose.

[lxxxiv.] The moderate vision was by no means poplar, and was reviled by committed Catholics and Presbyterians alike. The account of Armenina moderatism is based on an article in Mullan, 167. On this reading, James VI is seen as having sought modest church reform, and as working to bring the Presbyterian and Episcopal churches closer together. One advocate of moderate Protestantism was Philippe du Plessis-Mornay. As a leader of the Huguenots, du Plessis-Mornay aimed for a Protestant synod to settle differences that were threatening to dismantle the advances of the Reformation. Another moderate was Issac Casaubon, who sought a middle ground upon which church unity might flourish. A further influence in Scotland was the German thinker George Calixtus.

[lxxxv] Given that King James VI had reason to suspect the loyalty of many Scottish statesmen, the fact that several members of the Primrose family came to be closely connected with his monarchy suggests that the King considered them to be very a trustworthy family. It was a time of great tension in Scotland, and their service during many years of religious and civil conflict played an important role in establishing the Primrose family. But only one of the two prominent branches of the Primrose family prevailed in the long run. For whatever the reason, the influence of Gilbert Primrose MD and his branch of religious and medical descendants -- despite their prolific literary output -- gradually diminished. Gilbert Primrose DD's two sons followed in their family's traditional roles of doctors and ministers. James became a physician, principally noted for his mistaken rejection of Harvey's theory of blood circulation. Harvey correctly observed that the blood circulates around the body, and that the heart plays a central role in pumping the blood through the veins. Many objected to Harvey's view, which, in its novelty, seemed strange. James Primrose, the son of Gilbert Primrose DD and grandson of the surgeon to King James VI, devoted his energies to producing unsuccessful arguments against William Harvey's theory of the circulation of the blood. They were perhaps motivated as part of a defence of the scholastic tradition. The second son, David, carried on his father's ministerial connections with the French Church in London. This David Primrose may be the author of the 1625 pamphlet entitled *Scotland's Complaint Upon the death of our late Soveraigne King James of most happy memorie,* written in the panegyric style akin to that of his father. One explanation for the turn in fortune for this branch of the family might be that it was too overlty linked with controversial religious doctrines and policies of the Stuart monarchs that, whatever their merit, had not gained in popular support. If so, the descendants of Gilbert Primrose M.D. were simply casualties of the severity of religious conflict in Britain.

Much effort was spent in the early modern era reacting to the scholastic tradition that had endorsed Aristotle and wholeheartedly embraced medieval theology. Even as the 'received' view -- the view under criticism -- Aristotle plays an important role in defining the developments out of which in the new ideas emerged. In the midst of all the new experimentation and theorising, there were many hits, but just as many misses. Areas of learning in which it seemed least controversial to break with Aristotelian theories that had dominated the scene related to the sciences. In the domain of medicine, for example, which was quickly gaining in popularity in Edinburgh, there had already been impressive advances made on the Continent. Servetus and Vesalius, had made world-shaking discoveries through anatomical dissections that showed the unreliability of centuries of medical theory and practice. But there was still a great deal of uncertainty and mistaken speculation about how the body and brain worked, and the continued strength of appeals to the authority of Aristotle is apparent from a story in Galileo's *Dialogues Concerning the Two Chief World Systems.* Galileo's story tells of an incident involving an anatomist from Venice. The anatomist performs a dissection to show that, contrary to Aristotelian doctrine, the nerves originate in the brain, not the heart. The story is meant to illustrate the barrier that Aristotle's philosophy presented to scientific progress, in this case to the claim that the nerves originate in the brain. An Aristotelian philosopher present at the dissection says: 'You have made me see this matter so plainly and palpably that if Aristotle's text were not contrary to it, stating clearly that the nerves originate in the heart, I should be forced to admit it to be true.' [Stillman Drake, *Galileo: Dialogues Concerning the Two Chief World Systems* (Berkeley: University of California Press, 1953). [Mathews, 63].The moral of Galileo's story is that the real bar to scientific progress was the appeal to authority, a habit ingrained in Scholastic philosophy's unquestioned foundation in Scripture. In

the field of science, Scholastic philosophy transferred similar authority to Aristotle.

[lxxxvi.] Mullan,176. Lord Balmerinoch is referred to as 'James Elphinstone, second lord Balmerino' in Mullan article. Spelling discrepancies are typical, and spelling variations are the rule rather than the exception. In Colvin's article on Cramond , the spelling is Lord Balmerinoch and Sir James Elphinston of Barnton. His son, the second Lord Balmerinoch is referred to there as John Elphinston. Wood refers to the son as John Elphinstone.

[lxxxvii.] Mullan, 177.

[lxxxviii.] S.R. Gardiner, ed., *The Constitutional Documents of the Puritan Revolution, 1625-1660* (Oxford University Press, 1906), 132 and 136.

[lxxxix.] Wood, 225.

[xc.] The commission met on 7 August 1643 and was comprised of representatives from Scotland's General Assembly, a Westminster Assembly of Divines, and Commissioners from the English Parliament.

[xci] See Act VI of *The Lawes and Actes of the first Parliament of our most High and Dread Soueraign, Charles the Second, by the grace of God, King of Scotland, England, France and Ireland, Defender of the Faith.* Begun at Edinburgh, the first day of January, 1661. By a Noble Lord, John Earl of Middleton, Lord Cleremont and Fettercain; His majesties Commissioner for holding of the Parliament, by vertue of a Commission under His Majesties Great Seal of this Kingdom; With the Special Advice and Consent of the Estates of Parliament. Extracted and Collected from the Records of Parliament, by Sir Archibald Primerose of Chester, Knight and Barronet, Clerk to Hid majesties Council, Register and Rolls. Edinburgh. Printed by Evan Tyler, Printer to the Kings most Excellent majesty, Anno Dom. 1661. CUM PRIVILEGIO. Hereafter cited as Lawes and Actes of 1661.

[xcii] [Westminster Assembly of Divines]. *Minutes of the Sessions of the Westminster Assembly of Divines.* Ed Rev. Alex F. Mitchell and Rev. John Suthers. Edinburgh and London: William Blackwood and Sons, 1874. See the Introduction,xxvii. Herefater cited as Westminster Assembly.

[xciii] Westminster Assembly [xxvii].

[xciv] Westminster Assembly, lxx - lxxi.

[xcv.] Brandreth, 89.

[xcvi.] Scott, 97. It is said that that Marquis of Argyll aspired to overthrow the Stuarts because he wanted to become King of Scotland. So, although he led the Covenanting Army against Charles I and later governed Scotland on behalf of Cromwell, he may have had a hidden agenda, and therefore, divided loyalties.

[xcvii.] Scott, 97-8.

[xcviii.] Robertson and Scott. On p. 97 of Scott, one of the descriptions of Sir Archibald Primrose is attributed to Bishop Burnett.

[xcix.] [get David Allen's book on stoicism and Scottish statesmen.] If the early seventeenth century curriculum in Edinburgh is any indication, Allen's thesis that the Roman ideal of citizenship played an important role in shaping several generations of Scotland's statesman is no exaggeration. See Morgan, 110-15. The Edinburgh College curriculum is described on 3rd December 1628: As part of daily Latin studies, incoming students had to translate 'sum pairt of Cicero or any uther Latine author into Inglisch' and the description of the curriculum frequently mentions the study of 'some oratiounes of Cicero'. The written and spoken language of the college was Latin, and penalties were exacted for those speaking in Scots. As the students' Latin translations were individually examined, the Regent would 'in the meane tyme teacheth theme sum pairt of Cicero or sum uther guid writter'. In the second year, another eight or nine weeks emphasising 'some oratiounes of Cicero', and the same goes for the 'Class of Humanities'. The third and fourth year placed emphasis on Aristotelian philosophy, or what we today think of as the scholastic tradition. Other Roman and Greek authors were also studied. Another main component in the curriculum was religious and moral training.

[c] Lawes and Acts, Act VIII, 10.

[ci] Lawes and Actes XV, 38. Act Rescinding and Annulling the pretended Parliaments, in the years, 1640, 1641, &c.

[cii] Lawes and Actes of 1661, Act XI 'Act for taking the Oath of Allegiance, and asserting the Royal Prerogative', 18.

[ciii] Lawes and Actes of 1661, Act XXXVI 'Act of Pre[s]entation of Ministers'. Sir Archibald would have been very aware of the significance of this Act, which stated that any Minister refusing to take the Oath of Allegiance was to be removed from office, and that Patrons refusing to conform would lose the right of Patronage and be considered disaffected to His Majesty. Presumably the example made of Hamilton and his career was in deference to this Act.

[civ] See the *Scots Fasti*, 201.

[cv] [Follow up: Dalmeny's George Turnbull --1688.]
[cvi] *No Popery! or a Catechism Against Popery. Wherein the Heretical Doctrines, Idolatrous Worship, and the Superstitious Practices of the Roman catholic Church are Briefly yet Plainly Refuted: And the PROTESTANT PRINCIPLES Proved by Testimonies of Holy Scripture, and the Evidence of Reason*. By a Minister of the Gospel. (Edinburgh: John Reid, 1683), 15 and 29. Hereafter cited as No Popery!
[cvii] John Locke, *Two Treatises of Government,* Laslett, Peter, ed., (Cambridge University Press, 1960). Hereafter cited as Locke.
[cviii] Locke, 39. The original source is a letter from the third earl of Shaftesbury to Jean Leclerc, February 1705; Shaftesbury Papers (P.R.O. 30/24, XLVII, 28,3). 'When my grandfather quitted the Court and began to be in danger from it, Mr Locke now shared with him the dangers as before the honours and advantages. He entrusted him with his secretest negotiations, and made use of his assistant pen in matters that nearly concerned the state, and were fit to be made public, to raise that spirit in the nation which was necessary against the prevailing Popish party'
[cix] Carstares was sent as an emissary to those plotting in England to place William on the throne. He is said to have known about the Rye House Plot of 1684, which involved a plan to assassinate James II. See Alexander Grant, *The Story of The University of Edinburgh During its First Three Hundred Years,* vol. I and II, (London: Longmans, Green and Co., 1884), vol.1, 260. Hereafter cited as Grant.
[cx] One of Locke's principal targets is this respect is Leibniz, who appears to uphold a version of the Platonic theory of ideas, a form of innatism. Plato's theory of recollection invokes the notion that we are in possession of certain ideas that no sensory experience could have given to us. Plato, for example, held a version of the doctrine of innate ideas. According to Plato, we are not born with explicit knowledge of these ideas, but when we have certain experiences, we recall the ideas, from the 'back to our mind' so to speak. Strictly, therefore, Plato does not believe that we have innate ideas, if by this it is meant that we are born with certain ideas already before our minds. But neither does he believe that we obtain all our ideas from experience. Experience serves only to awaken ideas in us that we have forgotten. So in a sense, those ideas must have been in us all along, waiting to be awakened.
[cxi] For Aristotle, understanding something requires knowing its four causes. The four causes are termed the formal, material, efficient and final causes. In Aristotle's famous Bronze statue example, the formal cause is the geometrical form of the finished statue, the material cause is the bronze of the statue, the efficient cause is the sculptor's activity, and the final cause is the sculptor's purpose in carving the block. Having assigned the causes, we can claim to know the nature of the thing. This analysis of causes formed the basis of the analysis of things for Aristotle, suggesting a tight connection between the stuff of the world and its underlying order, as would be consistent with the idea a Divine Creation.
[cxii] Also incompatible with Locke's theory were the views of Descartes and Plato, who are often characterized as holding forms of 'direct realism'; that is, views that hold that the immediate objects of our perceptions are mind-dependent, and that that are mind-independent external objects. Locke replaced direct realism with an 'indirect' or 'representative realism' according to which the image of an external thing is caused by, and a representation of, the real object. The indirect realist thinks that secondary qualities such as colours are mere sensations in the minds of observers, and not in the world at al. However, primary qualities such as size, shape, and motion are objective properties of material bodies.
[cxiii] When the executioner was ordered to remove the thumbkins, 'he found it beyond his strength to undo what he had done, and the King's smith had to fetch his tools to revert the screw, before the broken and mangled thumbs could be released.' As Alexander Grant reflects in *The Story of The University of Edinburgh*, 'It is remarkable that in the portrait of Carstares the painter gives so much prominence to the right thumb. It is as if Carstares were purposely exhibiting a member which had suffered so much, and were saying: 'You see, it is none the worse.' See Grant, vol. I, 260-1, 261n. See also Robert H. Story, William Carstares, a Character and a Career of the Revolutionary Epoch (1649-1715) (London, 1874), 94. Hereafter cited as Story.
[cxiv] George Edward Cokayne, *The complete peerage of England, Scotland, Ireland, Great Britain, and the United Kingdom, extant, extinct, or dormant* (Gloucester: A. Sutton, 1984). Hereafter cited as The Complete Peerage.
[cxv] See Grant, vol I, 259.
[cxvi] [Information on Archibald Primrose and others involved with the Whig-Presbyterian government.]
[cxvii] Horn, 24, 26. The notes belonged to a student named Flint. Oddly enough, an Elizabeth Flint marries a Robert Pillans in Cramond not long after these notes were made, leading one to wonder about the connections between the Flint and Pillans families. Regent Pillans was a signatory to the

oldest extant Master of Arts degree for the University, awarded in 1674. Pillans' signature is one of a handful on the document, and he signs it in Latin as what appears to be 'Ja: Pilanus' -- i.e., James Pillans? See Horn, 27. [Find out if this is an ancestor of the later James Pillans and descendants. If so, then Pillans family connections to the university and to Cramond extend very far back indeed and that the university reforms proposed in the nineteenth century by James Pillans, the humanities Professor, take on a new and deeper significance. Cf. Fearn.]

[cxviii] Grant, vol. 1, 274.

[cxix] Horn, 36.

[cxx] Grant, vol. I, 86-87.

[cxxi] Horn, 36-7.

[cxxii] Grant, vol. I, 243.

[cxxiii] Grant, vol. I, 244.

[cxxiv] The record shows that the Patrons describe the book containing the laws made by the Town Council for governing the masters and scholars in the College said to contain numerous faults, especially, several uses of the word 'faculty' as a as a term of reference for the Principal and Professors. In the original Charter of the university, which had vested the government in the Town Council, the term 'Faculty' and 'Senate' do not appear. In 1704, the Council examined the laws pertaining to the university, noting the instances where the word 'faculty' is used to describe the professors. Upon discovering the introduction of the term to its university documents, the Town Council 'objected to them as implying a claim on the part of the teachers to independent powers in the educational and administrative affairs of the University.' Morgan, 230n.

[cxxv] Morgan, Part III: Extracts from Acts of the Town Council anent the College and University, 16th June 1704, pp. 152-4. Afterwards, the term 'University Meeting' was used in the first half of the eighteenth century to replace the offending terminology, the intended significance being the same.

[cxxvi] Morgan, 16th June 1708, 164.

[cxxvii] This was consistent with the objectives of the educational system first introduced to Scotland by John Knox. Scotland's church based school system in the sixteenth century. As a result, virtually all of Scotland's parishes, including Cramond and Dalmeny, had local Presbyterian schools. The Presbyterian parish schools were strongly promoted by the church, so that most parents sent their children to school during the day. At minimum, such schooling ensured that a child would learn to read the Bible: 'But although public schools were established by the authority of government, in every parish in Scotland, no person was compelled to send his children to these schools. They did not indeed require any compulsion. For having themselves found to their comfortable experience, that the word of God is the only true guide to happiness, both in this world and in that which is to come, they were anxious to transmit this blessing to their children, as the very best heritage which they could possibly bestow upon them.' William Kerr. *A Summons of Wakening or, The Evil Tendency and Danger of Speculative Philosophy Exemplified in Mr. Leslie's Inquiry into the Nature of Heat; and Mr. Malthus's Essay on Population, And in that Speculative System of Common Law, which is at present administered in these Kingdoms. To which is subjoined, A Prospectus of an Inquiry into the Origin of Government and Law* (London: Hawick, 1807), 144-5. Hereafter cited as Kerr.

[cxxviii] M.A. Stewart, *The Kirk and the Infidel* (Lancaster University Publications: 2001) 4.

[cxxix] Grant, vol. I, 270.

[cxxx] It is seems likely that when Hutcheson had imbibed the lessons of Berkeley's critique of Locke while in Dublin. It may even be possible to trace an influence from Hutcheson, through to Turnbull and Reid.

[cxxxi] Grant, vol. I. 271-2. The original source is *Scots Magazine*, 1741.

[cxxxii] ibid.

[cxxxiii] Grant, vol. I, 274.

[cxxxiv] This Archibald Primrose was executed for treason in 1746.

[cxxxv] The two thinkers approached political issues quite differently. Hume considered politics and institutions from a historical perspective, with the goal of identifying causal factors leading to the present circumstances and events. As such, he was primarily interested in a historical analysis of politics rather than the conceptual foundations of government.

[cxxxvi] Roger Emerson. 'The "affair" at Edinburgh and the "project" at Glasgow; the politics of Hume's attempts to become a professor' in M.A. Stewart and John P. Wright, eds., *Hume and Hume's Connexions,* (Penn State University Press, 1994), 1-22. Hereafter cited as Emerson.

[cxxxvii] Emerson, 1.

[cxxxviii] Initially, he was strongly supported by several leading officials -- and the politically powerful third Duke of Argyll in particular. However, it is likely that both Whig parties would have been afraid to give the appearance of sponsoring an 'infidel' and perhaps even fostering social and religious

unrest. The Squadrone and Argethelian parties shared many of the same interests and concerns as candidate ruling Whig parties. Both parties badly needed to find church and university leaders who could articulate a vision that would bring together a fractured nation. That the Whig elite was involved in a power struggle does turn out to be important to understanding the story of Mary Shepherd, but it is not crucial to understanding the strange combination of values upheld by the Moderate literati or their success in Edinburgh. Both can be readily explained independently of a Squadrone or an Argethelian victory.

[cxxxix] Emerson, 10. This is George Wishart's description of Hume's philosophy.

[cxl] The key to the moderates' success in linking the Whig elite and Presbyterian leadership was in their ability to represent concerns voiced by opposing parties, while appearing to move the political agenda forward in an 'enlightened' way. On the one hand, the moderate professors defended the Hanoverians and condemned the Jacobite rebellion, a stance that was popular with both the monarchy and the Presbyterians. On the other hand, they supported the Patronage Act of 1712, which was popular with the Whig nobility, since the Patronage Act supported their traditional rights of church patrons. In the end, the group succeeded in carving out a delicate position that landed them somewhere in the middle of the incommensurable views of competing political factions.It is difficult to make perfect sense out of the moderate position at a theoretical level. They are best understood as forgers of political compromises.

[cxli] In the seventeenth century, the life of Sir Archibald Primrose was spared following the intercession of the 'Marquis of Argyle' after the battle of Philiphaugh. See Scott, 97. In the eighteenth century, the Primrose family was connected by marriage to the fourth Duke of Argyll. Mary Campbell, sister of the fourth Duke, was married James Primrose, the second Earl of Rosebery. See Complete Peerage under Argyll. The death of the second Duke of Argyll had divided the House of Argyll. Still, it is likely that the Primrose family would have fallen in with the ruling Argathelians throughout most of the eighteenth century. In the nineteenth century, Lady Mary Shepherd was a friend of a descendant of this house, Lord John Campbell, who became Baron and Lord Chancellor of England. Thus, the Primrose and Campbell families had long-standing connections. Brandreth, 42.

[cxlii] The third Duke's involvement seems mainly to have been aimed at gaining control over Edinburgh's Town Council.
Emerson, 1-5. With the third Duke's rise to power came the influence of Edinburgh's moderate party.

[cxliii] Rosebery Muniments, (HM Register House, National Archives of Scotland) Neil Primrose, Correspondence 1803-68, NRA 10461, vol. 28.

[cxliv] Inglis (1806), 89n. Inglis writes that 'All parties in the Church, it should be remembered, concurred unanimously in the warning against the infidel principles of Mr Hume, which was given by the General Assembly 1755.'

[cxlv] Robertson, 229.

[cxlvi] Robertson, 229.

[cxlvii] Holton, 5.

[cxlviii] A new dwelling, Dalmeny House, was finally built in 1814-17 under the direction of Mary's brother, Archibald Primrose, the fourth Earl of Rosebery.

[cxlix] The period in which Neil Primrose rented Holland House, then considered on the outskirts of London, was shortly following that in which the proprietor, Lord Kensington, had been forced to sell his own freehold. As with Sir Roger Mowbray and Barnbougle, Lord Kensington and his descendants were 'barred and extinguished' from any further claim to the property and title.

[cl] Christopher Christie, *The British Country House in the Eighteenth Century* (Manchester University Press, 2000). Hereafter cited as Christie. For more on the specific subjects addressed above, see Christie, pages 2, 109, and 112.

[cli] See 'Of Paternal Power' in Locke, Book II, 64.5. See also Locke's 'On Education'.

[clii] Christie, 2.

[cliii] The family made annual visits to another country residence, Bixley Hall in Norfolk.

[cliv] Robertson, 229.

[clv] The area was home to a dynamic intellectual and religious community by the mid-nineteenth century. See Alexander Campbell Fraser, *Biographia Philosophica: A Retrospect* (Edinburgh: William Blackwood, 1904). Hereafter cited as Fraser. See also Grant.

[clvi] John Wood, 'Parish of Cramond' in *The Statistical Account of Scotland Drawn Up from the Communications of the Ministers of the Different Parishes*, vol. I, pp. 211-226, John Sinclair, ed. (Edinburgh: William Creech, 1799), 225. Hereafter cited as Wood. The entry 'Parish of Cramond' is extracted from an unpublished manuscript by John Wood entitled 'The Topography of Cramond Parish'. Cf. John Wood, *The antient and modern state of the parish of Cramond, to which are*

added, some biographical and genealogical collections, respecting some of the most considerable families and individuals connected with that district; comprehending a sketch of the life and projects of John Law of Lauriston. (Edinburgh: Peter Hill, 1794). It is about seven miles from Dalmeny to Edinburgh.

[clvii] Christie, 2.

[clviii] Christie, 131.

[clix] Brandreth, 28.

[clx] Brandreth, 28. It is unclear from the context of the original passage whether Mary, Charlotte, or both girls frequented the local manse. As a member of the General Assembly of the Church of Scotland and Treasurer of the Royal Society of Edinburgh, Mr. Bonar was linked to a controversy surrounding the election of John Leslie to the Chair of Mathematics at the University of Edinburgh. The theological séances with Mr. Bonar may well have had something to do with the Leslie controversy. However, given that Bonar and others in the area were involved in the movement that led to the Disruption of the Established Church of Scotland, the discussions may well have had to do with religion and freedom of conscience. In any case, the illicit visits demonstrate the strong sense of independence on the part of the Primrose children.

[clxi] Holton, 5, And note: The grounds for religious division in Scotland were manifold -- an important one being that Presbyterianism rejected both the ecclesiastic authority of the monarch and the Papal authority of Rome. Presbyterianism transferred authority directly into the hands of the presbyters themselves, and abolished the Bishopric altogether -- an element of democracy popular with many Scots, though problematic for the ruling classes. Indeed, politically, the presbyteries had played an important role in weakening traditional lines of power in Scotland. The English church, which had initially broken with Rome under Henry the VIII, took a radical new direction under the Protestant Elizabeth I, adopting the Anglican denomination, and becoming the national Church of England. Like its Scottish counterpart, the Episcopal Church, the Anglican Church of England retained aspects of the Roman Catholic doctrine, liturgy, and formal structure. However, Scotland's Episcopal Church retained traditions that the Anglican Church had expressly and vehemently rejected; in particular, it retained the tradition of the apostolic succession of Bishops. In its stead, the Anglican Church had adopted a system through which Bishops were appointed by the authority of the monarch. The issues at stake were more than merely doctrinal. For, Scotland's Queen Mary and her descendants stood in line to inherit the English throne, so that both sovereignty and religious independence was at stake for England. In 1560, for example, Presbyterian reforms succeeded in breaking the apostolic line of succession in the Bishops of the Episcopal Church. Though the Episcopate was ordered restored in the same year, the basis for deep ideological and political divisions had been clearly articulated. Moreover, for political reasons, England stood to gain by a weakened Scotland, and often helped to undermine the Episcopacy. The fact that the Scotland's Episcopal tradition remained tied to the Church of Rome on matters such as apostolic succession and Papal authority was sufficient to drive a wedge between the Episcopal and Anglican Churches, and this division worked to the advantage of Presbyterianism.

[clxii] Buried in the Rosebery aisle at Dalmeny Church, Neil Primrose's funeral service was held at the Episcopalian Charlotte Chapel, under the direction of Daniel Sandford, Bishop of Edinburgh.

[clxiii] This is a substantial number, representing about one in six parishioners.

[clxiv] Robertson, 241. Robertson lists two clergymen in Dalmeny; one Established and one Seceder. Thomas Robertson represents the Establish Church of Scotland.

[clxv] Despite the paucity of written history prior to the Reformation, interesting clues to these more ancient times are to be found in architectural and archaeological details. Dunfermline, for example, was originally founded around a chapel belonging to priests of the Celtic Church. Across the Forth, the town of Cramond, near Barnbougle, was built around the remains of an early Roman fort. Dalmeny, which is the name of the parish associated with Barnbougle, bears further evidence of Scotland's history of diverse cultures and traditions. The words 'Barnbougle' and 'Dalmeny', for example, derive from the Celtic 'Bar na-buai-gall', which means 'the point of the victory of strangers' and 'Dumanie', translated as 'black heath' or 'fort of the monks'. See Scott, 96 and Robertson, 227. In addition, 'About a mile to the west of Barnbougle Castle, on top of a high sea bank, is an ancient cairn, called by the country people the *Earl Cairny*, of a circular shape, 500 feet in circumference, and 24 high in the middle'. The cairn was probably raised as a sepulchral monument in the Celtic burial tradition. Robertson, 238. The Church itself was built for Gospatric by masons from Dunfermline Abbey, it originally belonged to the diocese of St Andrews, and later, to the Augustinian Abbey of Jedburgh. According to one source, there was a monastery of the order of the Holy Trinity at Dalmeny in 1297. Scott, 101.The original source of the remark is Father Hay in his *Scotia Sacra.* The abbey at Dunfermline is Benedictine and Culross abbey is Cistercian.

[clxvi] Michael Macgregor, *The pocket commercial gazetteer of Scotland and directory to the cities,*

towns, villages and hamlets showing the situations, distance, population and the countries in which they are situated...also an alphabetical list of railway stations...etc., etc. (Edinburgh: James Taylor, 1857), 358. [Check Gazeteer sources again, EPL.]

[clxvii] P. MacGregor Chalmers, *Dalmeny Kirk: its history and architecture* (Glasgow: Carter and Pratt, 1904).

[clxviii] Outside, the churchyard holds reminders of an earlier Celtic tradition, so that 'At the door of the church there is a stone-coffin of large dimensions, cut from a single block, and covered both on the lid and sides with hieroglyphics which cannot now be deciphered'. Scott, 102. To this it is added that, 'Coffins of similar material, but of much simpler and ruder construction, have been found in other parts of the parish, one of which is still to be seen with its end projecting from the bank'.

[clxix] Scott, 101-2. The Dalmeny church has been dated as far back as the tenth or eleventh centuries, based on its resemblance to the church of Narcoide, which was built before the time of William the Conqueror. One description is as follows:

It is a very elegant small fabric, all of cut stone, 84 feet long and 25 feet broad, except at the east end, where it contracts into a semicircle. The pediments of the principal doors and windows are richly carved, resting on single columns with Gothic capitals, and round the upper part of the building there is an embossment of carved faces, all dissimilar and of grotesque appearance. But the chief beauty of the church is in the interior, which has a striking effect on entering from the west, especially from the upper part of the gallery. The body of the church is divided into three parts by two semicircular arches, that over the chancel being so much smaller than the other as to render the perspective peculiarly pleasing. They are both richly ornamented with successive tiers of mouldings of a zigzag or starry shape.

[clxx] Brandreth, 34. Given the conventions of Presbyterian worship, there could, of course, be no question of an organ in the Dalmeny church or the secret meeting houses of Mary Primrose's youth.

[clxxi] Robertson, 236. Robertson writes of his own appointment that, 'The last presentation was given by the Earl of Rosebery; against which the late Earl of Hopetoun protested, as Vice-Patron, but waived his claim to the exercise of that right till the next vacancy.' Robertson was himself married in the parish of St. John's, Westminster, which suggests Anglican training and background.

[clxxii] The anti-burghers were formed from a group of seceders who had joined Erskine in first session from the Established Church of Scotland in 1733. The secession was linked to opposition of the Patronage Act of 1712.

[clxxiii] See Wood, 221 and Robertson, 235. Scotland's Presbyterian ministers promoted the parish schools, which served as a means for parishioners to learn the Bible and helped to consolidate the influence of the Established Church. In addition, there were two private schools in the area, and, all told, about 200 children attended the local rural schools.

[clxxiv] Robertson, 230.

[clxxv] *Parish of Dalmeny School Records 1792-1817* (National Archives of Scotland, Acc. CH2/86/14). The Dalmeny school log for 1792 lists 27 boys and 17 girls.

[clxxvi] M. Plant, *The Domestic Life of Scotland in the Eighteenth Century* (The University of Edinburgh Press, 1952), 13-18. On some accounts, the education of Scottish girls was quite limited, and upper class girls might split a typical day between such activities as sewing shirts, reading scriptures, writing letters, taking walks, and the occasional game or amusement. However, one has to wonder whether such accounts are entirely accurate. In addition to the Dalmeny statistics, one well-known Edinburgh teacher, James Mundell, lists 94 girls among his pupils between 1735 and 1761.

[clxxvii] Brandreth, 25-26.

[clxxviii] Brandreth, 26. The Presbyterian dissenter and [probably the father of the Edinburgh printer, and grandfather to the professor of the same name], The reference could be to either James Pillans (b. 1745) or his father, another James Pillans (b. 1722). The former was a printer in Edinburgh, and started his business in 1794. The latter was a contemporary in age to Neil Primrose (b. 1729). Brandreth's recollections of descriptions of Pillans suggest that the James Pillans who tutored the girls was the father of the printer. The grandson of the same name was a contemporary of Mary Primrose and her siblings, and later became a pioneer in the field of educational reform.

[clxxix] Education was obviously a priority in the eyes of Neil Primrose; for, not only did his two sons have a tutor, so too did his three daughters. As was typical, the tutor of the young Primrose brothers, Archibald and Francis, accompanied them to Cambridge. According to Brandreth, p. 116, the tutor, Stockdale, was 'a tall, rather stately looking man, with a large face, pink and white like a healthy child's, and in his later days, a shock head of white hair.' Stockdale remained a personal friend of Mary Shepherd in later years.

[clxxx] As James Pillans (b.1722) and Neil Primrose (b. 1729) advanced in age, it may have been difficult to keep up with the lively and bright Primrose brood. Given the authoritarian and paternal emphasis predominant in Scottish households, one would expect that both parents and tutors would have been stern disciplinarians. However, one gets the sense that the discipline in the Primrose household was softened by a love of learning and liberal views on education and religion.
[clxxxi] Christie, 114.
[clxxxii] Christie, 114.
[clxxxiii] Brandreth, 26.
[clxxxiv] John Fearn, 'Reply to the Criticisms of Lady Mary Shepherd's on the "First Lines": With Observations on her Ladyship's Views with regard to the Nature of Extension as contained in her Essays on the Perception of an External Universe', in *Parriana: or Notices of the Reverend Samuel Parr*, E.H. Barker, ed. (London: Henry Colburn, 1828), 632. Hereafter cited as Fearn. It is not entirely clear whether the reference is in fact to James Pillans. It could be that Fearn intended to refer to some other instructor of Mary Shepherd's. It is thought that James Mill was employed as a tutor sometime between 1790 and 1802 and one account states that Mill 'had a tutorship in the family of a Scottish nobleman in East Lothian'. Another account suggests that Mill 'had been a corrector for the press in Edinburgh'. With respect to the former account, Alexander Bain reports that the name of the nobleman is not given but that the narrative is repeated in two places. The story is that Mill 'gave offence to the heads of the family by drinking the health at the table of one of the junior female members of the house,' and subsequently 'gave up his situation, and determined to trust to his pen and his own exertions.' A slightly different version has it that Mill 'threw up the appointment suddenly, owing to an affront given to him at a dinner party'. Specifically, Mill's pride was offended when he was 'motioned to leave the dinner table with the ladies'. It is interesting to note in connection with these accounts that the some of the eldest James Pillans was a printer, and that James Mill could well have assisted the ageing Pillans as tutor and the younger as corrector. See Alexander Bain. *James Mill: A Biography* (London: Longmans, Green, and Co., 1882), 27-29.
[clxxxv] Brandreth, 26.
[clxxxvi] Brandreth, 27.
[clxxxvii] Brandreth, 26.
[clxxxviii] Brandreth, 26.
[clxxxix] Brandreth, 31-32. Mr. Stockdale accompanied the Primrose brothers to Cambridge.
[cxc] Brandreth, 33.
[cxci] Mary Shepherd to Charles Babbage, 18 November 1825 (British Library, Babbage Correspondence, MSS 37183, f. 204).
[cxcii] Jane Rendall, *The Origins of Scottish Enlightenment* (New York: St. Martin's Press, 1978), 206-236. Hereafter cited as Rendall.
[cxciii] See Edinburgh Transactions, vol. 1, part 1, 10.
[cxciv] R.B. Johnson, ed., *Bluestocking Letters* (London: Bradley Head, 1926). The most famous Bluestocking was Scotland's own Lady Mary Montague Wortley. On p. 269, a 'Miss Primrose' is mentioned in a letter from Mrs. Carter to Mrs. Vesey dated from Spa on July 26, 1763. The reference could be to Neil Primrose's sister Dorothea. Dorothea Primrose appears to have sued her family and she won a settlement in 1761. She married Sir Adam Inglis of Cramond in 1766, and died without issue at Bath in 1783.
[cxcv] Alan Bell. *Sydney Smith: A Biography* (Oxford: Clarendon Press, 1980), 20. Hereafter cited as Bell.
[cxcvi] Bell, 55-56.
[cxcvii] In Edinburgh, the grandson of the Primrose tutor, also James Pillans, was among the leaders in educational reform movement. This James Pillans became Professor of Humanities at the University of Edinburgh, and devoted his career to educational reform and the philosophy of education. The majority of his publishing efforts addressed the subject of educational reform, and he made frequent trips to visit rural parishes in both Scotland and abroad, for the purpose of assessing the state of the education system. See the entry under James Pillans (1778-1864) in *The Dictionary of National Biography* (London: Oxford University Press, 1975). James Pillans Junior assessed the educational systems in various countries, and devoted much of his professional career to the subject of educational reform. In the 1830s, Pillans played an important role in giving advice to Parliament on the subject of educational reform. Alexander Grant writes of Pillans that 'Outside the University he did much good by promoting educational reform in Scotland. He was one of the first to advocate Governmental inspection of schools and the institution of Normal Seminaries.' See Grant, vol. II, 322. See also James Pillans, *Contributions to the Cause of Education* (London: Printed in Edinburgh,1856).
[cxcviii] Christie, 116. Mary Fairfax Somerville, is said to have studied mathematics at night, hiding her

activities from her disapproving father. Mary Somerville went on to make important contributions in mathematics and science, and was a friend of Mary Primrose in adulthood.

[cxcix] Richard Sher. *Church and University in the Scottish Enlightenment: The Moderate Literati of Edinburgh* (Princeton University Press, 1985), 324. Hereafter cited as Sher.

[cc] Sher, 309. With regard to the *avisamentum,* Robertson's practice seems to have been to shift people around within the university in order to prevent the exercise of the *avisamentum*. Humanities positions were filled internally, so that newly vacant positions would be in the sciences. Eleven of the thirteen chairs created at University of Edinburgh between 1762 and 1859 were scientific or technical chairs, including chairs in areas such as astronomy, agriculture, technology and medicine.

[cci] Grant, vol. I, 86-87.

[ccii] Edinburgh civil unrest and attack on Robertson in 'No Popery' affair of 1770's.

[cciii] David Hume to Allan Ramsey, April or May 1755 in *Letters of David Hume*, vol. 1, J.Y.T. Greig, ed. (Oxford: Clarendon Press, 1969), 219-221.

[cciv] Sher, 322. Though politically conservative, Walter Scott was socially intimate with many of the influential liberals and radicals of his day.

[ccv] John Playfair, *Letter to the Author of the Examination of Professor Stewart's Short Statement of Facts with an Appendix* (Edinburgh: W. Creech and Archibald Constable & Co., 1806), 57. Hereafter cited as Playfair (1806).

[ccvi] Despite continual waves of attack on liberal ideals, Robertson and his followers found ways to negotiate with Edinburgh's conservatives. Their strategy was unique, if somewhat opportunistic. They looked for ways to uphold the values of both the Presbyterian and Whig establishment, while standing firm on their commitment to intellectual freedom -- a commitment that positioned them among the intellectual leaders of enlightenment Europe. Strategically, the approach was brilliant. Even as they came to wield considerable power in the General Assembly, the Town Council, and the College, they remained supporters and friends of Hume. In their own way, they secured him a measure of dignity and influence. Their liberal stance and opposition to the 'persecuting spirit' was made clear through their support for Hume after his notorious exclusion from the University of Edinburgh. Through them, the larger issues around both Hume's philosophy and his failed candidature remained alive in Edinburgh for many decades to come.
See Sher. Hume's reputation is subject to injury to this day. In Edinburgh, Hume's statue may be seen crowned by an orange road construction marker. Sometimes paraphernalia such as a pack of cigarettes or a can of beer are added.

[ccvii] Royal Society of Edinburgh, *Transactions of the Royal Society of Edinburgh*, vol I., part I (Edinburgh: J. Dickson, 1788), 21. Hereafter cited as Edinburgh Transactions, vol. 1, part 1.

[ccviii] Edinburgh Transactions, vol. 1, part 1, 27-28. The comments are only significant because it appears that the vast majority of read papers were published.

[ccix] A.F.M. Willich *Essays and Treatises On Moral Political and Various Philosophical Subjects. By Emmanuel Kant, M.R.A.S.B. and Professor of Philosophy in the University of Koenigsberg. From the German by the Translator of the Principles of the Critical Philosophy*. *In Two Volumes.* (London: Printed for the Translator; and sold by William Richardson under the Royal Exchange, 1798), vol. II, v-vi. Hereafter cited as Willich (1798b).

[ccx] Willich (1798b) vol..II, xiv.

[ccxi] Willich (1798b), vol. II, v-vi.

[ccxii] Robertson, 232.

[ccxiii] Robertson, 232.

[ccxiv] Holton, The pagination is not continuous, and this represents p. 7 of the manuscript, or p. 1 of the section entitled 'Dalmeny Parish Details'.

[ccxv] J.G. Fyfe, *Scottish Diaries and Memoirs 1746-1843* (Stirling: E. Mackay, 1942), pp. 318-9.

[ccxvi] By all accounts, the family had suffered serious financial loss due to the mismanagement of the family fortune by Neil's father, James Primrose, the second Earl of Rosebery. Having rebuilt the family fortune, Neil Primrose probably had a good sense of money, although he may have carried his frugality to extremes at times. The third Earl refused his wife the pleasure of an afternoon society of ladies, and is also said to have allowed Barnbougle, and possibly Holland House, to deteriorate under his care.

[ccxvii] *A Letter to Thomas Payne Esq.; Written in Consequence of the One Lately Addressed by Him to Mr. Secretary Dundas*. By a Highlander. (Edinburgh: William Creech, 1792), 3-4. Hereafter cited as Highlander.

[ccxviii] Highlander, 19.

[ccxix] L.S. Jacyna, *Philosophical Whigs: Medicine, Science and Citizenship in Edinburgh, 1798-1848* (London: Routledge, 1994), 65. Hereafter cited as Jacyna.

[ccxx] Dugald Stewart, 'The Philosophy of the Active and Moral Powers of Man' in *The Collected Works of Dugald Stewart*, Sir William Hamilton, ed., vol. IV (Edinburgh: Thomas Constable and Co., 1855), 111-112. Through the influence of Stewart and others, there grew to be a large contingent of liberal lawyers and politicians in Edinburgh, many of whom would later form part of the Whig opposition in Parliament.

[ccxxi] Most of Mary's Primrose ancestors were either members of or had been educated in the legal profession, including her brothers and many friends and local acquaintances.

[ccxxii] *History of the Speculative Society 1764-1904*. Edinburgh: T and A Constable, 1905. p. 11.

[ccxxiii] Henry Cockburn. *History of the Speculative Society of Edinburgh. From its Institution in MDCCLXIV*. Edinburgh: Printed for the Society, MDCCCXLV, p. 33-38. Hereafter cited as Cockburn (1845).

[ccxxiv] Cockburn (1845), 36.

[ccxxv] Cockburn (1845), 37.

[ccxxvi] Cockburn (1845), 37.

[ccxxvii] Cockburn (1845), 37.

[ccxxviii] Brandreth, 28-29. [Naturally, I would like to find these.]

[ccxxix] Standard editions of David Hume's most celebrated works are: *A Treatise of Human Nature*, edited by L. A. Selby-Bigge, 2nd ed. revised by P.H. Nidditch (Oxford: Clarendon Press, 1975); *Enquiry concerning Human Understanding, in Enquiries concerning Human Understanding and concerning the Principles of Morals*, edited by L. A.Selby-Bigge, 3rd edition revised by P. H. Nidditch (Oxford: Clarendon Press, 1975). *The Letters of David Hume*, edited by J.Y.T. Greig, 2 volumes (Oxford: Clarendon Press, 1932); *Dialogues concerning Natural Religion*, edited by Norman Kemp Smith (Oxford: Oxford University Press, 1935);*The Natural History of Religion,* edited by H. E. Root (Stanford: Stanford University Press), 1967; Ess*ays, Moral, Political, Literary*, edited by Eugene F. Miller, (Indianapolis: Liberty Classics, 1985);*The History of England*, edited by William B. Todd (Indianapolis: Liberty Classics, 1983). (Hume, the Empiricists, 516).

[ccxxx] [Hume reference].

[ccxxxi.] Church of Scotland, *Report of the Proceedings and Debate in the General Assembly of the Church of Scotland, Respecting the Election of* Mr *Leslie to the Mathematical Chair in the University of Edinburgh* (Edinburgh: James Ballentyne, 1805), 6. Hereafter cited as Report.

[ccxxxii.] John Inglis, *An Examination of Mr Dugald Stewart's Pamphlet, relative to the Late Election of a Mathematical Professor in the University of Edinburgh* (Edinburgh: J. Moir, 1805), 144. Hereafter cited as Inglis (1805). See also John Inglis, *Reply to Professor Playfair's Letter to the Author of the Examination of Professor Stewart's Short Statements &c. Including Some Remarks on* Mr *Stewart's Postscript* (Edinburgh: John Moir, 1806). Hereafter cited as Inglis (1806).

[ccxxxiii.] Inglis (1806), 89n. Inglis writes that 'All parties in the Church, it should be remembered, concurred unanimously in the warning against the infidel principles of Mr Hume, which was given by the General Assembly 1755.'

[ccxxxiv.] Sher, 309. Eleven of the thirteen chairs created at University of Edinburgh between 1762 and 1859 were scientific or technical chairs, including chairs in areas such as astronomy, agriculture, technology and medicine.

[ccxxxv.] Sher, 322. Though politically conservative, Walter Scott was socially intimate with many of the influential liberals and radicals of his day.

[ccxxxvi.] See Edinburgh Transactions, vol. 1, part 1, 10.

[ccxxxvii.] John Playfair, *Letter to the Author of the Examination of Professor Stewart's Short Statement of Facts with an Appendix* (Edinburgh: W. Creech and Archibald Constable & Co., 1806), 57. Hereafter cited as Playfair (1806).

[ccxxxviii.] Royal Society of Edinburgh, *Transactions of the Royal Society of Edinburgh*, vol I., part I (Edinburgh: J. Dickson, 1788), 21. Hereafter cited as Edinburgh Transactions, vol. 1, part 1.

[ccxxxix.] Edinburgh Transactions, vol. 1, part 1, 27-28

[ccxl.] Report, 6.

[ccxli.] Report, 33.

[ccxlii.] E. C. Mossner, 'Philosophy and Biography: The Case of David Hume', in V.C. Chappell. ed., *Hume*, (University of Notre Dame Press, 1968), 8. Hume suffered a similar defamation of character. Samuel Johnson called him a rogue, a blockhead, and a liar, and John Stuart Mill said of him that 'regard for truth formed no part of his character'.

[ccxliii] Report, 143.
[ccxliv] Inglis (1805), 33.
[ccxlv] Inglis (1805), 34-36.
[ccxlvi] Dugald Stewart, *A Short Statement of Some Important Facts, relative to the late Election of a Mathematical Professor in the University of Edinburg* (Edinburgh: Archibald Constable & Co.,1805), 133. Hereafter cited as Stewart (1805). Two later editions followed the 1805 publication of Stewart's pamphlet. Inglis (1805) makes extensive remarks on Dugald Stewart's *Short Statement* of 1805.
[ccxlvii] Report, 33.
[ccxlviii] Report, 234.
[ccxlix] Report, 239.
[ccl] Stewart probably intends to follow the precedent set by an Act of the Town Council dated 2nd November 1720. The Act is quoted in Morgan, on pp. 171-2,:

Town Council is 'fully satisfied and convinced not only from the nature of the things and from the universall practise of all well governed Colledges and citys that the office of a Minister and Professor cannot be discharged in a suitable manner by one person at one and the same tyme, and haveing likewise observed that the few instances of contrary practises in their said Colledge have rather arisen from necessity then choice, Do hereby Statute and Ordain that hencefurth and in all tyme comeing no person who is a Minister of the Gospel and in the actuall exercise of his ministry in this city shall be by us or our successors in office elected and admitted Professor of Divinity or History in the said Colledge unless previous to his admission he demit his miniteriall charge not to be reassumed during his continuance in his office of professor, And all future Commissions to the saids Professors shall bear a clause by which they shall be voided and become null in the veent of any Professor becoming a Minister of this city, And doe hereby declare they will not directly or indirectly consent to nor concurr in the lieting or calling of any person to be a Minister of this city who is at the same tyme a Professor of Divinity or History in their said Colledge unless he previously resign and demitt his Professorship, Declaring alwayes, as it is hereby declaired, that nothing herein contained shall be construed to extend to the office of Principall of their said Colledge.

[ccli] Greyfriar's Presbytery, the parish united to University of Edinburgh, was the presbytery eligible to exercise the right of *avisamentum*. This limitation seems to have been ignored in the Leslie affair.
[cclii] John Leslie, *An Experimental Inquiry into the Nature and Propagation of Heat* (London: T. Gillet, Salisbury Square,1804). Note xvi begins on p. 521. It is a note to p. 136 of the main text. Hereafter cited as Leslie (1804).
[ccliii] Macvey Napier, 'Biographical Notice of Sir John Leslie, Late Professor of Natural Philosophy in the University of Edinburgh', *Encyclopedia Britannica* (1836). [NB This quote was taken from p. 23 of a bound extract of the Encyclopedia article.] Hereafter cited as Napier.
[ccliv] Stewart (1805), 37.
[cclv] Stewart (1805), 118-9
[cclvi] *Envy at Arms! or, Caloric alarming the Church* (Edinburgh: Printed for the Booksellers, 1805).
[cclvii] The full force of Erskine's pun is perhaps impossible to feel unless one also keeps in mind that Leslie's footnote on Hume was followed by a long etymological analysis of the word 'cause'.
[cclviii] On p. 205 of the Report, Erskine offer this amusing parody of academic metaphysical analysis:

Supposing I should go to a gentleman of professional habits, -- the deacon of the tailors, -- for information on this subject, and, laying hold of one of the buttons of his coat, should say to him, "Pray, Sir, what is this little incumbrance here? It is surely no part of the coat, for it is made of metal, and the coat of cloth." Would he not answer, "O Sir, it certainly is a part of the coat, and a very important part too; do you not perceive, sir, that it is a button?" "A button, say you! -- well, deacon, what are these unsightly rents just opposite, which spoil the smooth and entire

appearance of the coat? these surely can form no part of it." -- "Why, my dear sir, these are very necessary things, they are the button-holes, they will make your coat sit closely and pleasantly upon you." This, I suppose, would be the information I should receive, and I have no doubt you would admit it to be correct. -- Now, Sir, I apprehend that *notes* are the *buttons* of publications. But, after all, the subject is not worth the thing I have been talking about.

[cclix.] Alan Bell, *Sydney Smith: A Biography* (Oxford: Clarendon Press, 1980), 49. Hereafter cited as Bell. This description of Sydney Smith's humour is in a letter from Lady Bessborough to Lord Granville Leveson Gower. Decades later, the Oxford Movement would involve similar persecutions, so the mockery of Scotland was perhaps a bit premature. The latter persecutions involved a W.G. Ward, but the Mr Ward referred to by Lady Bessborough is most likely J.W Ward, also known as Lord Dudley. The reference to Mr Allen is a reference to John Allen, the personal physician and close companion of Lord and Lady Holland. Allen had lectured in the sciences at the University of Edinburgh at the turn of the nineteenth century, and was considered to hold radical views. See Jacyna, 43.

[cclx.] Playfair (1806), 71.

[cclxi.] Inglis (1805), 146.

[cclxii.] Report, 234.

[cclxiii.] Friedrich A. Nitsch, *A General and Introductory View of Kant's Principles Concerning Man, the World and the Diety Submitted to the Consideration of the Learned* (London: J. Downes, 1796). Nitsch's book was a direct outgrowth of his London lecture series on Kant. On p. 52-53, Nitsch discusses the materialists, idealists, spiritualists, eclectics and skeptics, with a view to illustrating that Kant shows:

> ...that Philosophers have not yet succeeded in determining accurately and in a universally evident manner, what we are to understand by the faculty of sense, and that it is still uncertain whether or not this faculty can furnish such materials as can admit of being modified into ideas of immaterial existences, different from the operations of the human mind.
>
> ...that is extremely doubtful whether or not this faculty [of sense] can form any solid judgments concerning immaterial existences.
>
> ...that the incorrect and ambiguous descriptions of sense and intellect have produced as incorrect and ambiguous descriptions of reason, and that therefore we have no certain authority for assigning to this faculty, a power of penetrating into the invisible regions of immaterial objects.
>
> ...that it is to sense, intellect, and reason, that we are indebted for all our knowledge, and that the limits of what can be known by man are still unsettled.

On my reading, Nitsch's assessments of Kant's accomplishments are incorrect and misleading.

[cclxiv.] J.G. Lockhart, *The Life of Sir Walter Scott* (London: Everymans Library, 1957), 62.

[cclxv.] A.F.M. Willich, *Elements of the Critical Philosophy* (London: T.N. Longman,1798). Hereafter cited as Willich (1798a). Three philological essays by Adelung were translated from German and appended to the back of the work. This may seem an odd sort of appendix, but perhaps not so odd given the context in which Willich's *Elements* was written and published. The inclusion of the philological essays might simply be a consequence of Willich's having introduced Kant studies through German language classes. The selection of philological essays is also intriguing. One of the early complaints against the critical philosophy was that Kant's representation terminology was too difficult, cumbersome, and awkward. Of philological essays included by Willich, one concerns the history of the English language, and it sets the language in a less than favourable light, so the

inclusion of the philological essays might have been intended to deter objectors to Kant's terminology. Adelung's first essay on the history of the English language also surveys important contributions to English literature and philosophy, including contributions of eminent women.

[cclxvi.] René Wellek, *Immanuel Kant in England: 1793-1838* (Princeton University Press,1931). Hereafter cited as Wellek. On page 31, Wellek says that one German visitor to Edinburgh, a man by the name of Niebuhr, reports that he had been to a philosophical luncheon where Kant's philosophy had been discussed rather badly. Hereafter cited as Wellek. Charles Villers, *Philosophie de Kant ou Principes Fondamentaux de la Philosophie Transcendentale,* (Gottingue: Metz, 1801). Hereafter cited as Villers. Thomas Brown, 'Viller's Philosophy of Kant' in *Edinburgh Review,* vol. 1, January 1803, pp. 253-80. Hereafter cited as Brown (1803). Sir William Drummond, *Academical Questions* (London: W. Bulmer, 1805). Hereafter cited as Drummond.

[cclxvii.] Stewart (1805), 56. The significance of 'London connections' in the discussion is that the real center of power in Britain was London. The ruling parties in Scotland were those most successful in securing the confidence of the monarchy and central London government. Thus, the Ministers claim that the King's tailor endorsed their view; just as Stewart cited a London based theologian as an authority.

[cclxviii.] The theologian in question might be James Stanier Clarke, a clergyman and librarian at Carleton House under the Prince Regent. However, it could also be another individual, possibly a theologian, who communicates with reference to an idea originating with Dr Samuel Clarke. The latter theologian exchanged letters with Leibniz through Caroline, Princess of Wales, and is in fact mentioned explicitly by Stewart. In any event, a letter from Issac D'Israeli to John Murray makes reference to an 'important expedition' made by the printer John Murray to Edinburgh in 1805: 'I have repeatedly felt a secret satisfaction at the spirit with which, by Clarke's communications, I heard you pursued your expedition'. See Samuel Smiles, *A Publisher and His Friends: Memoir and Correspondence of the Late John Murray,* (London: John Murray, 1891), 54 and 66. It is possible that Dr Samuel Clarke's communication to Leibniz was suggested anonymously, or by James Stanier Clarke, as an answer to the Ministers. This suggestion may have been brought to Edinburgh via the printer John Murray. In any case, at least one John Murray was a defender of Leslie at the General Assembly debates of May 1805.

[cclxix.] Stewart (1805), 88.

[cclxx.] Stewart (1805), 89-90.

[cclxxi.] Napier, 23-24.

[cclxxii.] Stewart (1805), 112n.

[cclxxiii.] Stewart (1805), 96-102.

[cclxxiv.] Stewart (1805), 98-9.

[cclxxv.] Stewart (1805), 83.

[cclxxvi.] Stewart (1805), 50.

[cclxxvii.] Stewart (1805), 94n. Stewart refers to Book III, Title IV. 'Of Witches and Charmers' in *Collections and Observations Methodized, Concerning the Worship, Discipline, and Government of the Church of Scotland*. By Walter Stewart, Esq, of Perdivan.

[cclxxviii.] Napier, 23.

[cclxxix.] Inglis (1805), 122.

[cclxxx.] Inglis (1805), 122.

[cclxxxi.] Inglis, (1806), 57-58.

[cclxxxii.] Thomas Brown, *Observations on the Nature and Tendency of the Doctrine of Mr Hume concerning the Relation of Cause and Effect* (Edinburgh: Mundell and Son,1805). Hereafter cited as Brown (1805).

[cclxxxiii.] Thomas Brown, *Short Criticism of the Terms of the Charge against* Mr *Leslie in the Protest of the Ministers of Edinburgh as explained by them in this Late Pamphlet* (Edinburgh: Mundell and Son, 1806), 15. Hereafter cited as Brown (1806).

[cclxxxiv.] Inglis (1805), 111.

[cclxxxv.] Playfair, 72-73

[cclxxxvi.] W.L. Brown, *Remarks on certain Passages of 'An Examination of* Mr *Dugald Stewart's*

Pamphlet, By One of the Ministers of Edinburgh,' Relative to Subjects Nearly Connected With the Interests of Religion and Learning (Edinburgh: W. Creech and A Constable and Co., 1806).

[cclxxxvii.] Willich (1798b), vol. II, v-vi.

[cclxxxviii.] Willich (1798b), vol.II, viii-ix.

[cclxxxix.] A.F.M. Willich *Essays and Treatises On Moral Political and Various Philosophical Subjects. By Emmanuel Kant, M.R.A.S.B. and Professor of Philosophy in the University of Koenigsberg. From the German by the Translator of the Principles of the Critical Philosophy*. *In Two Volumes.* (London: Printed for the Translator; and sold by William Richardson under the Royal Exchange, 1798), vol. II, v-vi. Hereafter cited as Willich (1798b).

[ccxc.] Willich (1798b) vol..II, xiv.

[ccxci.] Willich (1798b), vol. II, v-vi.

[ccxcii.] Villers, p. 110.

[ccxciii.] Villers, p. 110.

[ccxciv.] Villers, pp. 111-112.

[ccxcv.] Brown (1803), pp. 265-66.

[ccxcvi.] Drummond (1805), pp. 372-73.

[ccxcvii.] Brown (1805), 14.

[ccxcviii.] D. Brewster, *An Examination of the Letter Addressed to Principal Hill on the Case of Mr Leslie In a Letter to its Anonymous Author. With remarks on Mr Stewart's Postscript and* Mr *Playfair's Pamphlet*. By a Calm Observer (Edinburgh: Mundell and Son, 1806), 10-11. Hereafter cited as Brewster.

[ccxcix.] The sense of *a priori* that Brewster likely had in mind is that in which the idea of necessary connection is linked to the operation of sense organs. This sense of the term *a priori* gives an empiricist spin to the term. It is a sense that recurs in Scottish thought, and may be broadly understood to mean *a priori* in the sense of being a condition of empirical cognition.

[ccc.] Brown (1805), 2n.

[ccci.] Brown's propositions are based on the fourth of Hume's *Philosophical Essays on the Human Understanding.*

[cccii.] Brown (1805). The definitions are spread over pp. 2-24.

[ccciii.] Brown (1805), 10.

[ccciv.] Brown (1805), 14.

[cccv.] Brown (1805), 19.

[cccvi.] Brown (1805), 28.

How many are there, who during a long life spent in a foreign country, have lost, in their pictures of remembrance, almost every trace of the friends of their youth! Yet the faint conceptions that arise are dear to them still, not as fictions, but as realities; and it is not from any fading of memory that they tremble, when they fear, that the friends for whom they are anxious exist no more. The very wildness and wonderfulness of romance, as it excites peculiar emotion, is a cause not of less, but of more, lively conception; and when we are interested in our knight, the tower and the giant rise before us in stronger colours, than the host and his inn on a modern highway.

[cccvii.] Report, 46-48.

[cccviii.] Brown (1806), 35-36.

Such is the simple view of causation, which in a former work, I have exhibited and supported at length. To the argument of that work I look with peculiar satisfaction, not so much from any importance which I attach to it, in its relation to the progress of science, as from its relation to an object still more intimately connected with human happiness...Whatever, therefore, may be the general sentiment, as to my own peculiar views of the subject of this momentous question, I shall have attained my wish, if, in the discussions into which I have been led, I have succeeded in shewing, that the evidences for the most important of all truths remain unshaken, whether we

adhere to the received distinction of efficient and physical causes, or adopt that simpler notion of causation, which I have endeavoured to illustrate.

[cccix.] Shepherd (1824), 5-6.
[cccx.] Shepherd (1824), 27-28.
[cccxi.] Brown (1805), 40.
[cccxii.] Brown (1805), 46.

The just and beautiful analysis which reduces our expectation of similarity in the future trains of events to intuition, we may therefore safely adopt, without any fear of losing a single argument for the existence of God; -- till it be shewn, that physical demonstration itself is not dependent on an instinctive principle, and that, hence, if the belief of power had depended, not on instinct, but on reason, it would have rested on a principle of surer evidence.

[cccxiii.] Shepherd (1824), 136 ff..
[cccxiv.] Shepherd addresses Brown and Lawrence in the final two chapters of her 1824 treatise.
[cccxv.] Shepherd (1824), 46-49.
[cccxvi.] Shepherd (1827), xv.
[cccxvii.] The third Lord Holland was in his minority at this time. The rental would have been through Charles James Fox.
[cccxviii.] Christie. 104-5.
[cccxix.] This figure is based on the assumption that all of the daughters received the same dowry as Charlotte Primrose. Brandreth, 51.
[cccxx.] Complete Peerage, see Rosebery. Lady Jerningham is said to have made the following unkind remark on 27 May 1800, Charlotte Primrose's wedding day:

Lady Charlotte Primrose's match was not sanctioned by her parent's consent. He is a near relation of Lady Rosebery's and may become Earl of Effingham, but has at present only his pay as Col. in the Guards. Her Banns were muttered over in the Parish Church, and she walked out at the Hall door and met Col. Howard at the end of the street, whence they proceeded to the Altar of Hymen.

[cccxxi.] Little is known of Dorothea Arabella Primrose and Francis Ward Primrose. Not long after Charlotte was married, Arabella married Mr. William Hervey, who is said to have been painfully shy, and awkward in company. Arabella's died in 1825. The youngest son, Francis Ward, moved to Canada to escape his gambling debts, where he was happily married.
[cccxxii.] Trowbridge H. Ford, *Henry Brougham and His World: A Biography* (Chichester: Barry Rose, 1995) 226. Hereafter cited as Trowbridge.
[cccxxiii.] Trowbridge, 225.
[cccxxiv.] Brandreth, 18-20.
[cccxxv.] Brandreth, 19. On page 18, Brandreth writes,

That brings me to think of the crushing tragedy which occurred at Barnbougle in, I suppose, 1815. It was crushing, for, as i know, my uncle Rosebery (your grandfather) never inwardly recovered from the anguish of it, and certainly your poor grandmother Harriet Countess of Rosebery was crushed! My mother always had for her the most tender commiseration, and I in degree can share it, for I can just remember her and her sweet child-like face.

[cccxxvi.] Assuming the accuracy of her eldest daughter's date of birth, Mary Shepherd's gestation period was 264 days, which is 10 days shorter than the median gestation of 274 days for *primiparas* who are 'private-care white patients'.
[cccxxvii.] Henry John Shepherd's principal writings include: *A Summary of the Law Relating to the*

Election of Members of Parliament (H. Butterworth: London,1825), *The Countess of Essex. A tragedy in five acts and in verse* (London, 1834), *Pedro of Castile. A poem* (London, 1838), and 'Memoir of the Right Honourable Sir Samuel Shepherd,' *Law Magazine,* no. 52 (c1840).

[cccxxviii.] Brandreth, 25-26.

[cccxxix.] Brandreth, 25-26.

[cccxxx.] Brandreth, 25-26.

[cccxxxi.] Brandreth, 41-42.

[cccxxxii.] Brandreth, 42.

[cccxxxiii.] Brandreth, 4, 43.

[cccxxxiv.] Brandreth, 42.

[cccxxxv.] Brandreth, 119.

[cccxxxvi.] William Kerr. *A Summons of Wakening or, The Evil Tendency and Danger of Speculative Philosophy Exemplified in Mr. Leslie's Inquiry into the Nature of Heat; and Mr. Mathus's Essay on Population, And in that Speculative System of Common Law, which is at the present administered in these kingdoms. To which is subjoined, A prospectus of one Inquiry into the Origin of Government and Law* (London: Hawick, 1807). Hereafter cited as Kerr. Kerr says that his first two essays were originally intended as a footnote to the latter, but became too long.

[cccxxxvii.] John Leslie, *An Experimental Inquiry into the Nature and Propagation of Heat* (London: J. Mawman, 1804). Hereafter cited as Leslie (1804).

[cccxxxviii.] 'Leslie on heat and Moisture', *Edinburgh Review* vol. 24, no. 48*,* 339-353 (February 1815) 341. I have read somewhere that Leslie is suspected to have been the author of the largely positive reviews of his work in the *Edinburgh Review*.

[cccxxxix.] John Leslie, *A Short Account of Experiments and Instruments, Depending on the Relations of Air, to Heat, and Moisture* (Edinburgh: W. Blackwood, 1813) 21-22. Hereafter cited as Leslie (1813). 'Leslie on heat and Moisture', *Edinburgh Review* vol. 24, no. 48*,* 339-353 (February 1815) 341.

[cccxl.] Kerr claims that Leslie's work shows that heat does behave like light. That is, heat does appear to radiate in all directions from the center of a body, and to be equally diffused in space.

[cccxli.] Kerr, 23.

[cccxlii.] 'Leslie on heat and Moisture', *Edinburgh Review* vol. 24, no. 48*,* 339-353 (February 1815) 339.

[cccxliii.] Leslie (1813), 22. See 'Leslie on heat and Moisture', *Edinburgh Review* vol. 24, no. 48*,* 339-353 (February 1815) 342.

[cccxliv.] Kerr, 9.

[cccxlv.] Karl Popper, *Conjectures and Refutations* (London: Routledge and Kegan Paul, 1963). Popper drew seven related conclusions: i. It's easy to find confirmation of a theory if we look for it; ii. Only risky predictions that could falsify a theory should count as confirmatory; iii. The more a theory forbids as impossible, the better; iv. A theory that is not refutable by any conceivable event is non-scientific; v. Testability is falsification; vi. Only a serious test that could falsify the theory can supply confirmation.

vii. Ad hoc re-interpretation lowers or destroys the scientific status of a theory.

[cccxlvi.] Imre Lakatos, *Philosophical Papers*, vol. 1 (Cambridge University Press, 1977). According to Lakatos, the hallmark of empirical progress is not trivial verifications. Nor are 'refutations' the hallmark of empirical failure, as Popper claimed. 'What really count are dramatic, unexpected, stunning predictions: a few of them are enough to tilt the balance; where theory lags behind the facts, we are dealing with miserable degenerating research programs.' Lakatos's interpretation of the relationship theories and facts emphasizes that: i. The 'unit' of evaluation is not an isolated hypothesis but a research program; ii. The central laws of any research program form an inner core supported by a more flexible and 'protective' set of auxiliary hypotheses; iii. Each research program has its own problem solving techniques or 'heuristic'; iv. Progressive research programs predict novel facts; v. In degenerate research programs, theories are fabricated only to accommodate known facts. As Lakatos's explains, the relationship between theories and facts must emphasize how the central laws of any research program form an inner core supported by a flexible and 'protective' set of auxiliary hypotheses.

[cccxlvii.] Kerr, 3.
[cccxlviii.] Kerr, 55.
[cccxlix.] Kerr, 50-51.
[cccl.] Kerr, 48.
[cccli.] Kerr, 48.
[ccclii.] Kerr, 48.
[ccccliii.] Thomas Malthus, 'Essays on Population' in *The works of Thomas Robert Malthus,* E.A. Wrigley and David Sonden, eds. (London: Pickering, 1986) vol. 4.
[ccccliv.] Kerr, 58
[ccclv.] Kerr, 88.
[ccclvi.] Kerr, 98-111.
[ccclvii.] Kerr, 88.
[ccclviii.] Kerr, 123.
[ccclix.] Kerr, 122-3.
[ccclx.] Fulton Anderson, ed., *Francis Bacon: The New Organon and Related Writings* (New York: Liberal Arts Press, 1960). Hereafter cited as Bacon, with standard references to the aphorisms.
[ccclxi.] Bacon, Book II, Aphorism XI, 130.
[ccclxii.] Bacon, Book II, Aphorism XII, 132ff.
[ccclxiii.] Bacon, Book II, Aphorism XIII, 142ff.
[ccclxiv.] Bacon, Book II, Aphorism XX, 158.
[ccclxv.] Thomas Brown, *Inquiry into the Relation of Cause and Effect* (Edinburgh: Archibald Constable, 1818). Hereafter cited as Brown (1818).
[ccclxvi.] Brown (1805), 2n.
[ccclxvii.] Brown (1818), --.
[ccclxviii.] S.A. Grave, *The Scottish Philosophy of Common Sense* (Oxford: Claredon Press, 1960), 182-3. Hereafter cited as Grave.
[ccclxix.] Noah Porter 'Thomas Brown: The Man and His Work' in *The Story of Scottish Philosophy*, Daniel Sommer Robinson, ed. (New York: Exposition Press, 1961) 190-213. Hereafter cited as Porter (1961).
[ccclxx.] Porter (1961), 192-3.
[ccclxxi.] Blakey, 31n.
[ccclxxii.] Blakey, 30.
[ccclxxiii.] Smiles, 316. The 1816 title is mentioned in a letter from Baron de Staël to John Murray discussing the possible publication of the work. The two were unable to reach a financial agreement, and Murray did not publish the work. It was published as *Considérations sur les principaux événements de la Révolution française* (Paris: Delaunay, 1818). The English edition was published in 1818 by Baldwin, Cradock and Joy.
[ccclxxiv.] Richard Whately, *Historic Doubts Relative to Napoleon Bonaparte*. (London: B. Fellowes, 1837), iii. Hereafter cited as Historic Doubts. On page iii, Whately writes,

> But some sensible readers have complained of the difficulty of determining what they are to believe. Of the existence of Buonaparte, indeed, they remained fully convinced; nor, if it were left doubtful, would any important results ensue; but if they can give no satisfactory reason for their conviction, how can they know, it is asked, that they may not be mistaken as to other points of greater consequence, on which they are no less fully convinced, but on which all men are not agreed?

[ccclxxv.] Historic Doubts, 29.
[ccclxxvi.] Historic Doubts, 41-42. Whately, incidentally, later became Archbishop of Dublin. Not surprisingly, Archbishop Whately was considered something of an eccentric in his day.
[ccclxxvii.] Historic Doubts, 47.
[ccclxxviii.] Historic Doubts, 51.

[cclxxix] Historic Doubts, 53. Whately added a postscript to his third edition, published shortly after the announcement of Napoleon's death. There, Whately adds an argument to the effect that that the probable case of suspicion that he has established regarding the life of Napoleon gives grounds for the supposition that Whately himself *killed* Napoleon.

[cclxxx] E. Tangy Lean, *The Napoleonists: A Study in Political Dissafection 1760/1960* (London: Oxford University Press, 1970), 118. Hereafter cited as Lean.

[cclxxxi] Alexander Bain, *James Mill: A Biography* (London: Longmans, Green, and Co., 1882), 188. Hereafter cited as Bain.

[cclxxxii] Brandreth,153-4.

[cclxxxiii] Brandreth, 129-131.

[cclxxxiv] *A Copy of the Bill of Indictment, Found at the Old Bailey Sessions, January 16, 1819 against Richard Carlile. For Publishing Paine's Age of Reason* (London: Richard Carlile, 1819), ivn. Hereafter cited as Bill of Indictment.

[cclxxxv] It is remarked in passing that according to Paine, the New Testament will be found to be 'equally false and paltry, and absurd as the Old.' Bill of Indictment, 14.

[cclxxxvi] Bill of Indictment, 4.

[cclxxxvii] Bill of Indictment, 5-6.

[cclxxxviii] Bill of Indictment, 7.

[cclxxxix] Bill of Indictment, 8-14.

[cccxc] J. Mills, *Speech of J.Mills at the British Forum Ought R.C. to be censured, Crown and Anchor Tavern, The Strand*. (London: Richard Carlile, 1819),13. The name also appears as J. Mill. One has to wonder whether the speaker was James Mill. According to page 435 of Alexander Bain's biography of James Mill, John Stuart Mill first appeared in print on the subject of Carlile: 'John Mill's first appearance in print was to denounce the prosecution of him [Carlile] and his wife. I have reason to believe that he received substantial aid in his long imprisonments from the Bentham circle.' On pages 61-62 of his *Autobiography*, John Stuart Mill says that his first letters that appeared in print concerned the Carlile affair, but that they were published under a pseudonym at the end of 1822. 'The prosecutions of Richard Carlile and his wife and sister for publications hostile to Christianity, were then exciting much attention, and nowhere more than among the people I frequented. Freedom of discussion even in politics, much more in religion, was at that time far from being, even in theory, the conceded point which it at least seems to be now; and the holders of obnoxious opinions had to be always ready to argue and re-argue for the liberty of expressing them.' John Jacob Coss, *Autobiography of John Stuart Mill* (New York: Columbia University Press, 1944). Hereafter cited as J.S. Mill. If the speaker is actually James Mill, this personal attack may have contributed to an increasing tension between James Mill and the 'intellectual' Whigs in charge at the *Edinburgh Review*. Whoever it was that spoke the 1819 words, whether one of the two Mills or not, he seems to have been in a position to know that Sir Samuel Shepherd had tolerant views on religion.

[cccxci] *Thoughts on the Christian Religion: By a Deist* (London: Richard Carlile, 1819). By Theophilanthropist. Signed 'A firm Believer in the only true God and a future State of Retribution' and dated January 30, 1819.

[cccxcii] Elie Halévy, *The Growth of Philosophical Radicalism*, translated by Mary Morris (London: Faber and Faber, 1934) p. 200. Hereafter cited as Halévy. Halévy's text quotes from Conway's *Life of Paine*, vol. i p. 375.

[cccxciii] John Gale Jones, *Speech of J.G. Jones at the British Forum Ought R.C. to be censured, Crown and Anchor Tavern, The Strand* (London: Richard Carlile, 1819), 8-10.

[cccxciv] *Open Letter to Sir Samuel Shepherd*, By Philalethes. The letter is dated March 2, 1819.

[cccxcv] Brandreth, 153.

[cccxcvi] This remark was made when Sir Samuel refused, on principle, to oversee the King's divorce. But presumably the remark was general in scope. Brandreth, 142.

[cccxcvii] Walter Scott, *The Journal of Sir Walter Scott: From the Original Manuscript at Abbotsford* (Edinburgh: David Douglas, 1890), vol. I, 51 and vol II, 336. Presumably, Sir Samuel spent most of his time in Edinburgh between 1819 and 1830. He resided at 16 Coates Crescent. In vol. II of his

journal, on page 336, Walter Scott remarks on 18 June 1830, that 'the good and very clever Lord Chief Baron is returned to his own country, with more regrets in Scotland than usually attend a stranger'. Hereafter cited as Walter Scott.

[cccxcviii.] John Leslie, *The Philosophy of Arithmetic: Exhibiting a Progressive View of the Theory and Practice of Calculation, With an Enlarged Table of the Products of Numbers Under One Hundred*. (Edinburgh: Archibald Constable,1817), 218n.

[cccxcix.] 'Leslie *versus* Hebrew' in *Blackwood's Edinburgh Magazine*, No. XXXV, February1820, 502.

[cd.] James Paterson, *Kay's Edinburgh portraits: A series of anecdotal biographies chiefly of Scotchmen* (London: Popular letterpress ed., 1885) 128. The article claims that Leslie's first literary employment was on the notes to a new edition of the Bible, published by his friend, Dr. William Thomson.

[cdi.] See the *Report of the Trial by Jury, Professor John Leslie against William Blackwood*, *July 22, 1822*, (Edinburgh: W&C Tait, 1822), 62. Hereafter cited as Trial.

[cdii.] Walter Scott, 21-27. Lockhart does seem to have had some part in the Leslie slanders, and with the Leslie trial pending, Walter Scott urged his son-in-law to cease writing for *Blackwood's.* In 1825, Lockhart accepted John Murray's offer to take up the editorship of his *British Quarterly Review*. At this stage, Murray apparently still did not know of Lockhart's role in the Leslie slanders. John Murray had himself severed his own ties to *Blackwood's* in the year preceding the Leslie trial, specifically because he was unhappy about the personal attacks appearing in the journal. But others connected with the *Quarterly* and its circle did know of Lockhart's role. Walter Scott acknowledged that the appointment was a controversial one, and several individuals, including Southey and Barrow, wrote letters to Scott to express their concerns about Lockhart's earlier slanders. D'Israeli was sent to Scotland to solicit some reassurance for Scott's friends in London. But as Scott remarked, 'I have no idea of telling all and sundry that my son-in-law is not a slanderer, or a silly thoughtless lad, although he was six or seven years ago engaged in some light satires. It turns out that it was Heber who, after Lockhart's appointment in 1825, informed Murray of Lockhart's connection to the earlier Lelslie episode. These reports were said to have had 'startled Murray' whom Byron referred to as 'the most timorous of all God's booksellers'.

[cdiii.] It was widely held that John Wilson was the sole author of the attacks; however, John Gibson Lockhart, was almost certainly connected with the slander as well. The latter information seems to have been successfully suppressed, perhaps out of respect for Walter Scott.

[cdiv.] National Library of Scotland, Letter of George Goldie to Oliver and Boyd, dated December 16, 1819. AC 5000/189, NLS. Oliver and Boyd were the printers for *Blackwood's Edinburgh Magazine*. John Murray's stopped representing Blackwood's *Edinburgh Magazine* in January 1819, after Blackwood refused to quit the personal attacks on public personalities.

[cdv.] Bain, 189-190.

[cdvi.] National Library of Scotland. 'Newspaper clippings etc., of David Irving', John Fairley,ed., Acc. L.C. 1957. Such celebrations do not appear to have been unusual. See Henry Cockburn, *Some Letters of Lord Cockburn* (Edinburgh: Grant and Murray, 1932). On page 20, Henry Cockburn describes another outrageous scene in a letter to his friend Thomas Dick-Lauder, dated 15 February 1822:

> Oh! what a glorious -- what a God-like bouze had we on the opening of Williams' Exhibition in the rooms. Jeffrey. Murray, Keay, Rutherfurd, Pillans, Lambton, G. Jos. Bell, Maitland, Cunninghame, Williams, Horner and myself -- twelve in all -- being the nine muses and three graces; dined surrounded by Greek scenes, with two fireplaces -- two lustres -- nobody but ourselves in the house -- and had we not a right of it? Geo.Jos. was appointed that day to succeed Hume as Professor of Scotch law -- and had you but seen the two professors, Pillans and he engaged, with Jeff piping as a little Pan, with a Pyrrhic dance!

[cdvii.] Lean, 117. The main objective of the trial seems to have been to deprive Queen Caroline of her title as Queen. Public support for the Queen was massive, and the trial was eventually 'postponed'. After Caroline was denied entry to the Coronation, she poisoned herself with opium and magnesia,

and she died ten days later.

[cdviii.] *Copy of the Information Exhibited Ex Officio, January 23, 1819, By His Majesty's Attorney General, Against Richard Carlile, For Publishing Paine's Age of Reason*. (London: Richard Carlile, 1819), 3.

[cdix.] Kerr,123.

[cdx.] William Thomas, *The Philosophical Radicals* (Oxford: Clarendon Press, 1979) 158. Hereafter cited as Thomas. See also James Mill's article in the *Westminster Review*, vol. 1, no 1 (January 1824) 207.

[cdxi.] In 1805, Leslie received recognition from the Royal Society of London for his work on heat. As the trial unfolds, we learn that there has in fact been an ongoing persecution of Leslie, involving charges that several of his scientific achievements were plagiarized. Leslie is charged with a *'monstrous plagiarism of his theory of heat'*. See Trial, 35, 48. But, as Macvey Napier points out in his memoir of Leslie, though Leslie's experimentalism drew on some previously known facts, the contributions for which he received recognition were the result of a new understanding of the facts, and novel discoveries made upon that new understanding. This, as Napier points out, is the norm in scientific discovery. See Napier. 27-30.

[cdxii.] Further attacks on Leslie followed in various numbers of *Blackwood's Edinburgh Magazine*, including Nos. XXXV, XL and XLIV, at which point the personal nature of the attacks against Leslie became more pronounced. *Blackwood's Edinburgh Magazine* was intended as a rival to the *Edinburgh Review*. Both publications became notorious for their outrageous attacks on the public personalities of Edinburgh. In promoting gossip and libel, the authors and publishers showed a reckless disregard for reputation and the practice of spreading nasty and often false rumors came to be increasingly disliked in Edinburgh. See also *Summons*, *Professor John Leslie, against William Blackwood, &c*. *December 4, 1820*, 1-2. Hereafter cited as *Summons*. The charges read that Blackwood and others:

> ...had recourse to the most false and abominable libels against him; and, in particular, have been in the practice of publishing in a work entitled 'Blackwood's Edinburgh Magazine,' the most foul and atrocious calumnies against his private and public character, as a man, and as a Professor: That, activated by this motive, and by a profligate and wanton disregard of his feelings and reputation, one or other, or both of them, have, in various parts of that work...represented, and held him out to the public, as a person distinguished by '*insolence*,' '*ignorance*,' '*impudence*,' and '*impertinence*;' as being an '*enfant perdu*;' as being *'actuated by a hostility to the language of revelation, simply because it was so*;' as '*going out of his path to cast an ignorant sarcasm on the language of the Bible*,' as 'being *an object of suspicion to those who hold the Scriptures in honour, or impiety in detestation*;' as being an imposter and dishonest; as being one of the public teachers of Edinburgh, by whom strangers, who come to the University here, have '*their religious principles perverted*,' *and their reverence for holy things sneered away*,' and as being one to whom the application of these terms and statements was but his *due*...

[cdxiii.] Trial, 35.

[cdxiv.] Trial, 111-2.

[cdxv.] J.S. Mill, 62.

[cdxvi.] J.S. Mill, 62-63.

[cdxvii.] Thomas Macaulay, 'Utilitarian Logic and Politics' in *Edinburgh Review*, vol 49, no. 98, 159-189 (March 1829), 185. Hereafter cited as Macaulay.

[cdxviii.] Macaulay, 188.

[cdxix.] Macaulay, 188-9.

[cdxx.] Thomas, 2.

[cdxxi.] It is also worth pointing out that James Mill mounted an attack on 'natural rights' as a basis for the constitutional descriptions of individual rights in America and France. James Mill argued that constitutional rights would have to be explicitly founded in law to be considered valid or 'legal'. Such an argument might serve the ends of the British government and Monarchy quite nicely.

[cdxxii] Mill's harm principle on liberty, which draws the line at harms to others, appears to me to be based on the assumptions of his Ethology. Cf. '...the sole end for which mankind are warranted, individually or collectively, in interfering with the liberty of action of any of their number, is self-protection.'

[cdxxiii] Letter from Mary Shepherd to Charles Babbage, 1832. British Library. Babbage Correspondence, MSS 37201 f. 432.

[cdxxiv] Napier, 23.

[cdxxv] Sir Samuel Shepherd's friendships provide few clues regarding Mary Shepherd's political leanings. He was close to the Thomas Erskine, thought to have been a Napoleonist, and also to Walter Scott, an ultra-conservative monarchist. One can't easily generalize or speculate about personal politics with this set, which is probably what they wanted.

[cdxxvi] Robert Blakey*, A History of the Philosophy of Mind: Embracing all Writers on Mental Science from the Earliest Period to the Present Time* (London: Longman, Brown, Green, and Longmans, 1850), vol. iv, 42. Hereafter cited as Blakey.

[cdxxvii] Blakey, 43.

[cdxxviii] Brandreth, 108.

[cdxxix] John Milton, *Complete Prose Works of John Milton* vol. II, Ernest Sirluck, ed. (London: Oxford University Press, 1959), 492-3. Hereafter cited as Milton. The four essences are air, earth, fire and water, the fifth and most fundamental is aether. The last sentence of the passage adds a kind of historical irony, given that it was doubt about the existence of aether that sparked Leslie's 1804 footnote, and that the footnote directly to a controversy relating to free speech and civil unrest.

[cdxxx] Milton, 562-3.

[cdxxxi] Alexander Campbell Fraser, Archbishop *Whately - The Restoration of the Study of Logic*. *Lecture Delivered Nov. 3, 1863* (London: MacMillan and Co., 1864), 40.

[cdxxxii] Shepherd (1824), 27-28.

[cdxxxiii] Shepherd (1824), 30.

[cdxxxiv] The 1827 argument places greater emphasis on the analysis of sensible objects, although Shepherd mentions the point in her 1824 treatise as well. See Shepherd (1824), 42n.

[cdxxxv] Hume’s subjectivist conclusion is that the idea of necessary connection is a subjective fiction ascribed by the mind when it perceives a constant conjunction of sensible qualities.

[cdxxxvi] Herschel's diaries and correspondence establish this point as uncontroversial. See David Evans et al., *Herschel at the Cape: Diaries and Correspondence of Sir John Herschel, 1834-1838* (Austin: University of Texas Press, 1969).

[cdxxxvii] On Herschel's view, laws of nature were seen as involving both correlation of properties and sequences of events, evidently stemming from an assessment of complex phenomena. Examples are Boyle's Law that pressure is proportional to temperature over volume and Newton's third law of the equal action and reaction of motion.

[cdxxxviii] Shepherd (1827), xv. The claim that neither perception nor acts of will contain an element of necessity is, of course, the very claim that Kant denied when he maintained that the faculty of understanding supplies an *a priori* rule for causal judgements. Kant’s argument is based on the claim that we can distinguish between cases where we perceive the mere temporal succession in appearances and cases where we perceive an objective order in the succession of appearances. The very fact that we are able to make the sort of determination that leads to a causal judgement, Kant argues, should lead us to infer the existence of an *a priori* causal principle at work in understanding.

[cdxxxix] Shepherd (1824), 27.

[cdxl] David Hume, *A Treatise of Human Nature,* L.A. Selby-Biggs (ed.), (Oxford: Clarendon Press, 1980), 157. *An Inquiry Concerning Human Understanding* in *The Philosophy of David Hume,* V. Chappell. ed., (New York: Random House, 1963) 327-330. Immanuel Kant. *The Critique of Pure Reason,* N. Kemp-Smith, ed. (London: Macmillan, 1929), B 289.

[cdxli] Shepherd (1824), 29.

[cdxlii] Shepherd (1824), 32, 35-37.

[cdxliii] Fearn, 632.

[cdxliv.] Daniel Robinson, ed., *Significant Contributions To the History of Psychology 1750-1920* (Washington: University Publications of America,1977), vol. v, xxviii. The remark is in Robinson's preface to the selections from Alexander Bain's work. This point will be taken up in detail later in the book.
[cdxlv.] Blakey, 31n.
[cdxlvi.] William Whewell, *Philosophy of Discovery* (London, 1860) 336. Hereafter cited as Whewell (1860).
[cdxlvii.] William Whewell, *History of Scientific Ideas* (London,1858) vol. I, 35. Hereafter cited as Whewell (1858).
[cdxlviii.] Shepherd (1827), 70.
[cdxlix.] Whewell (1858), I, 34. In Whewell (1860), 307, Whewell explains the main tenets of his view:

> The doctrine of Fundamental Antithesis is briefly this: That in every act of knowledge (1) there are two opposite elements which we may call Ideas and Perceptions; but of which the opposite appears in various other antitheses; as Thoughts and Things, Theories and Facts, Necessary Truths and Experiential Truths; and the like: (2) that our knowledge derives from the former of these elements, namely our Ideas, its form and character as knowledge, our Ideas of space and time being the necessary forms, for instance, of our geometrical and arithmetical knowledge; (3) and in like manner, all our other knowledge involving a development of the ideal conditions of knowledge existing in our minds: (4) but that though ideas and perceptions are thus separate elements in our philosophy, they cannot, in fact, be distinguished and separated, but are different aspects of the same thing; (5) that the only way in which we can approach to truth is by gradually and successively, in one instance after another, advancing from the perception to the idea; from the fact to the theory; from the apprehension of truths as actual to the apprehension of them as necessary. (6) This successive and various progress from fact to theory constitutes the history of science; (7) and this progress, though always leading us nearer to that central unity of which both the idea and the fact are emanations, can never lead us to that point, nor to any measurable proximity to it, or definite comprehension of its place and nature.

[cdl.] Whewell (1860), 530.
[cdli.] Whewell (1860), 467. Shepherd speaks most often of ideas of cause and effect being bound together with sense data, although she also suggest in places, that there may be other ideas, such as those of time and space, involved. This is something that I found hard to interpret.
[cdlii.] Whewell (1860), 470.
[cdliii.] Whewell (1860), 470.
[cdliv.] Whewell (1860), 467.
[cdlv.] Shepherd (1827), 169.
[cdlvi.] Shepherd (1824), 40.
[cdlvii.] Shepherd (1824), 43.
[cdlviii.] Shepherd (1824), 30.
[cdlix.] Shepherd (1824), 43.
[cdlx.] Shepherd (1824), 43-44
[cdlxi.] Shepherd (1824), 50.
[cdlxii.] Shepherd (1824), 59.
[cdlxiii.] Shepherd (1824), 100-101.
[cdlxiv.] Shepherd (1824), 108.
[cdlxv.] Shepherd (1827), 131.
[cdlxvi.] Shepherd (1824), 129.
[cdlxvii.] Shepherd (1824), 44-46.
[cdlxviii.] Shepherd (1824), 34.
[cdlxix.] Shepherd (1827), 358.
[cdlxx.] It is worth pointing out that the anonymous 1819 treatise invokes a 'string of pearls' metaphor in which events are likened to visible pearls, and causality is likened to the unseen thread underneath the pearls. Interestingly, Whewell uses the 'string of pearls' metaphor to explain his

own idea of causality. However, for all we know, the metaphor could have originated with someone like Dugald Stewart.

[cdlxxi.] Marion Rush Stoll, *Whewell's Philosophy of Induction* (Lancaster, Pa.: Lancaster Press Inc., 1929), 70.

[cdlxxii.] Brandreth, 4. The father in question is Lord Dalmeny, who was nephew to Mary Shepherd and the first son of her brother, Archibald Primrose, the fourth Earl of Rosebery.

[cdlxxiii.] Brandreth, 41-42.

[cdlxxiv.] Brandreth, 42.

[cdlxxv.] Brandreth, 4, 43.

[cdlxxvi.] Brandreth, 42.

[cdlxxvii.] Brandreth, 119.

[cdlxxviii.] James Bonar, *Letters of David Ricardo to Thomas Robert Malthus 1810-1823*, Oxford: Clarendon Press, 1887, 154-7. Hereafter cited as Bonar. Anthony Hyman, *Charles Babbage: Pioneer of the Computer* Princeton University Press, 1982, 178. Hereafter cited as Hyman.

[cdlxxix.] Letter from Mary Shepherd to Charles Babbage, abt. 1832, Babbage Correspondence, BL, MSS 37201, f. 432.

My dear Sir,

Professor Leslie says that Biot and Humboldt assign for both magnetic poles the opposite latitudes of 79 [degrees] 1' the longitude of the northern being 27 [degrees] 37' and that of the southern 205 [degrees] 12' west from Greenwich. The plane perpindicular to the magnetic one he says intersects the Equator at an angle of 10[degrees] 59' and in west longitudes 117[degrees] 37' and 300[degrees]27'. But it appears that in 1824 Captn Lyon found the magnetic pole was in latitude 63[degrees]26' and 51' and in 80[degrees]51'25' west long. pray what is the true faith?

Yrs truly M.S.
Lady Mary Shepherd

[cdlxxx.] The suggestion, of course, is that Dugald Stewart might be the namesake of Babbage's son Dugald -- a supposition that is certainly consistent with Charles' Babbage's practice --; his first son Herschel, for example, was named after his friend, John Herschel.

[cdlxxxi.] Henry John Shepherd and Edward Ryan were close friends, Babbage and Ryan married sisters, and Ryan helped to oversee Babbage's affairs when he died. Henry John Shepherd's Eton, Cambridge, and Lincoln's Inn connections developed into important social ties. William Maule, Edward Ryan, Thomas Talfourd, like Henry John Shepherd, became barristers on the Oxford circuit. Later, several of these friends achieved prominence through the British India Company.

[cdlxxxii.] Bonar, xi and Letter XXI, 55n.

[cdlxxxiii.] When Ricardo died suddenly in 1823, his close friend James Mill -- usually cool and rational -- was 'overwhelmed with grief'. But his intellectual antagonist, Malthus, likewise commented that 'I never loved anybody out of my own family so much'. (See Bonar, 240n) And, shortly before his death, Ricardo wrote a final letter to Malthus on a subject of perennial dispute between them, sending along his final greeting with a fine example of the civilized tone typical in this society: (l Bonar, xviii, Cf. Thomas Malthus in *Quarterly Review*, January 1824) 'And now, my dear Malthus, I have done. Like other disputants, after much discussion we each retain our own opinions. These discussions, however, never influence our friendship; I should not like you more than I do if you agreed in opinion with me.' (Bonar, 240).

[cdlxxxiv.] Cf. Hyman, 78. Who is the Minchin who was an acquaintance of Babbage at Trinity and who went out of his way to return to England in time to vote in support of liberal principles?

[cdlxxxv.] This is important because it shows the early connection to Mill, prior to the trial of Carlile. The Mills were openly critical of the trial and imprisonment of Carlile. They may have crossed the line with this crowd and issued personal attacks on Sir Samuel's role in the trial. John Stuart Mill, who was but a teenager at the time, later regretted some his youthful tactics. Check: James Mill's relations with some reformers may change at this juncture. Mill evidently felt betrayed and saw some of his reformer friends as having betrayed reformist principles of earlier days. The literary journals, for example, he charged with having abandoned the liberal cause.

[cdlxxxvi.] Henry John Shepherd, *A Summary of the Law relative to the Election of Members of Parliament* (London: Butterworth), 1825.

[cdlxxxvii.] 'One day', Mary Shepherd's daughter writes, 'I went with my mother to see Mr. Coleridge (Samuel Taylor Coleridge) at Highgate'. His conversation, she recalls was 'almost a monologue of poetic philosophy on the things between God and man; but my mother, with great tact, occasionally

asked a question which brought forth fresh and fresh streams.' Brandreth, 113.

[cdlxxxviii] Virtually everyone in London society, including the Shepherds, seems to have known and loved Walter Scott -- despite his ultra-conservative politics and overwrought sentimentalism for Scottish antiquity. Scott's interest in things historical, literary, and antiquarian would doubtless have been more important to this collection of intellectuals than any personal or political difference.

[cdlxxxix] As for Shepherd's exact views on social reforms, it is nearly impossible to speculate. Her husband wrote [parliamentary], and this gives at least some indication of where she may have stood. However, it would be unfair to assume this as Shepherd's own view. Although we do not know exactly where Shepherd stood on the political issues, we are not thereby deterred from gaining an understanding her philosophical system, which can be grasped from the general contextual understanding and philosophical analysis.

[cdxc] Babbage had 450 pounds a year, which would have been sufficient for most. However, for some time, he entertained every Saturday evening -- according to reports, sometimes up to hundreds of people on a given evening. Most importantly, he was singularly devoted to his Difference Engine and his Analytic Engine, and had to highly skilled mechanics full time in his shop. At one point, he had to increase his salary offer to his principal mechanic many times over in order to keep him. He asked his mother for advice. She replied that he was so far into it now, that he shouldn't stop pursuing his dreams. She recommended that he simply find a way to do with whatever he had left over! Not the usual parental advice.

[cdxci] Henry John Shepherd, Edward Ryan, Wiiliam Maule, Mr Pearson and Thomas Talfourd were barristers on the Oxford Circuit.

[cdxcii] I so construe the group because when the term 'philosophical radical' is defined by John Stuart Mill
[1820s], he is still very much an proselytizer of his father's views, and the elder Mill fits the category just as well as the younger.

[cdxciii] But the social influence of the ideas promoted by this group is an important point to remark. For the influence of their thought spread beyond the liberal and radical Parliamentarians, becoming part of the general outlook of the times in Britain.

[cdxciv] Mill also found Villers worth some of his time and attention; for he translated Viller's *The Reformation* in 1805.

[cdxcv] Brown may have discussed Kant with Dugald Stewart during this 15-year hiatus. Stewart published his own views on Kant about [1815]. [get and describe].

[cdxcvi] Giuseppe Micheli, 'The Early Reception of Kant's Thought in England 1785-1805', in George MacDonald Ross and Tony McWalter (eds.), *Kant and his Influence* (Bristol: Thoemmes Press, 1990), 273. Hereafter cited as Micheli.

[cdxcvii] Micheli. 273.

[cdxcviii] Daniel Robinson. *Significant Contributions To the History of Psychology 1750-1920,* vol. 1 (Washington: University Publications of America,1977), xxxiii. The remark is made in a Preface to works by Etienne Bonnot de Condillac and Thomas Brown.

[cdxcix] Noah Porter, 'Thomas Brown: The Man and His Work', in D.S. Robinson *The Story of Scottish Philosophy* (New York: Exposition Press, 1961), 192. Recent commentators such as Daniel Robinson have echoed this applause of Brown's purging of Reid's metaphysical assumptions from psychology. See Daniel Robinson. *Significant Contributions To the History of Psychology 1750-1920,* vol. 1 (Washington: University Publications of America,1977), xxxiii. The remark is made in a Preface to works by Etienne Bonnot de Condillac and Thomas Brown.

[d] Thomas Brown. *Sketch of A System of the Philosophy of the Human Mind. Part First. Comprehending The Physiology of the Human Mind*. (London: Longman, Hurst, Rees, Orme and Brown, 1820), 6-7. Hereafter cited as Brown (1820).

[di] Brown (1820), 12-13.

[dii] Cf. Bonar, 157.

[diii] Bain, 181n.

[div] Homa Katouzian, *Ideology and Method in Economics* (London: MacMillan Press, 1980), 23-23. Hereafter cited as Katouzian.

[dv] The idea behind utilitarianism originates with Scotland's David Hume and Adam Smith, and is first properly developed by Jeremy Bentham. John Stuart Mill, the son of James Mill, became famous for his defense of the principle of utility. This principle, which endorses the idea of the greatest good for the greatest number, was adopted as a new vision for the future of Britain, one that could build on and update the enlightenment ideals of Locke that still meant so much to reformers. Though most conspicuously articulated by the younger Mill. John Stuart Mill, however, explicit links the principle to the justification for social institutions at a time when aristocratic forms of authoritarianism were increasingly seen as unjust.

[dvi] Katouzian, 18.
[dvii] I have to track this down, but there was some derisive reference to an Edinburgh philosopher (the context seemed to suggest Thomas Brown) who believed in phrenology.
[dviii] Franz Gall, translated by Lewis, 1835, IV, 117-18.
[dix] Katouzian,24.
[dx] Katouzian,24.
[dxi] Works, 3: 301-2
[dxii] Michael Gootzeit, *David Ricardo* (New York: Columbia University Press, 1975) 4-5.
[dxiii] See Karin Johannisson, 'Society in Numbers: The Debate over Quantification in 18th-Century Political Economy' 343- 361 in T. Frängysmyr, J.L. Heibron, and Robin E. Rider, *The Quantifying Spirit in the 18th Century* (Los Angeles: University of California Press, 1990) 348-50.
[dxiv] Mary Shepherd, *An Essay upon the Relation of Cause and Effect Controverting the Doctrine of Mr. Hume Concerning The Nature of that Relation; with Observations upon the Opinions of Dr. Brown and Mr. Lawrence, Connected with the Same Subject* (London: T. Hookham,1824). Hereafter cited as Shepherd (1824). *Essays on the Perception of an External Universe and Other Subjects Connected with the Doctrine of Causation* (London: John Hatchard and Son,1827). Hereafter cited as Shepherd (1827).
[dxv] Mary Shepherd had two articles published as part of a philosophical exchange with John Fearn. Mary Shepherd, ✇Observations on Mr. Fearn❼s *Lines of the Human Mind*❼, in E.H. Barker (ed.), *Parriana: or Notices of the Rev. Samuel Parr, L.L.D.* (London: Henry Colburn, 1828), 624-27. Hereafter cited as Shepherd (1828). Mary Shepherd, ✇Lady Mary Shepherd❼s Metaphysics❼ in *Fraser❼s Magazine for Town and Country*, vol. v, no. xxx (July 1832), 697-708. Hereafter cited as Shepherd (1832).
[dxvi] Shepherd (1827), xiv-xvi.
[dxvii] Shepherd (1827), xii.
[dxviii] Kerr (1807), 6.
[dxix] Issac Newton, *Mathematical Principles of Natural Philosophy and the System of the World*, translated by A. Motte (Berkeley: University of California Press, 1934), 400. Hereafter cited as Newton.
[dxx] Newton's alchemical experimentation proceeds on the basis of the assumption that the geometrical analysis developed in the *Principia* might be successfully modified and applied to the analysis of aether. And it is curious to note that there are places in the Principia where discussions of physics and alchemy seem to cross. In the scholium to Proposition LXXVIII in Book I, Newton writes of 'centripetal forces that observe the same law of increase or decrease in the recess from the centre as the forces of the particles themselves do.' See also Newton, Book III, Section 25, where Newton claims that planets cohere and attract according to the same laws as particles. And in Book I, Proposition XCI, Newton specifies a method for finding 'the attraction of a corpuscle situated in the axis of the round solid, to whose several points there tend equal centripetal forces decreasing in any ratio of the distances whatsoever.' In Corollary III of the same proposition, Newton explains the method for determining the attraction of a corpuscle located within the solid spheroid. The method involves determining the net force on a corpuscle is equal to the force by which some point on the body's surface is attracted to the whole body in proportion to the ratio of the distances from the center to the corpuscle and from the corpuscle to the surface. In these and other similar remarks, Newton speculates in a way that seems to contravene the methodology advanced in his new physical theory. What Newton appears to be doing, is speculating about the geometrical constructions used to discover the gravitational law, and looking from the 'top-down', as it were, for the ultimate force law governing particles. But to many of his later interpreters, Newton's speculative remarks on aether were seen as a violation of his own methodological rules, rather than as part of an effort to push science in new and creative directions. In the end, Newton does not advance nearly as much as he had hoped in this respect, and, on the good advice of his editor, the Principia remained relatively free of speculative remarks on the mysterious forces at work on corpuscles in solid bodies.
[dxxi] Marie Boas Hall and A. Rupert (eds.), *Unpublished Scientific Papers of Issac Newton*, (Cambridge University Press, 1962), 317. Hereafter cited as Hall and Rupert.
[dxxii] Hall and Rupert, 345. This comment is dated May 1687.
[dxxiii] This theme, emphasised by Robert Butts and traced to Leibniz, is persistent in Kant's philosophy.
R. Butts, *Kant and the Double Government Methodology* (Boston: D. Reidel Publishing Co.,1984).
[dxxiv] [Physical Monadology, 475] - G.B. Kerferd and D. E. Walford, eds. 1968*. Selected Precritical Writings and Correspondence with Beck*. (Manchester: Manchester University Press, 1968), L.W. Beck, ed*. Kant's Latin Writings: Translations, Commentaries, and Notes.* (New York: Peter Lang

Publishing Company, 1986); L.W. Beck, ed. *Kant Selections.* (New York: Macmillan Publishing Company, 1988).

[dxxv.] Robert Butts' outlines Kant's reversal, as well as its import:

> Metaphysicians used to delude themselves that they could tell us what is worth seeking to know by telling us first what is. After Kant, epistemologists and methodologists tell us what is is a consequence of what is worth seeking to know. Thus the norms of knowing define the norms of being. Ontology follows epistemology.

[dxxvi.] [Physical Monadology, 475] - G.B. Kerferd and D. E. Walford, eds. 1968*. Selected Precritical Writings and Correspondence with Beck*. (Manchester: Manchester University Press, 1968), L.W. Beck, ed*. Kant's Latin Writings: Translations, Commentaries, and Notes.* (New York: Peter Lang Publishing Company, 1986); L.W. Beck, ed. *Kant Selections.* (New York: Macmillan Publishing Company, 1988).

[dxxvii.] J. Ellington. 1985. *Immanuel Kant: Philosophy of Material Nature* (Indianapolis: Hackett Publishing Company, 1985) [IV, 257]. Hereafter cited as Ellington.

[dxxviii.] Ellington, [IV, 260].

[dxxix.] G. Buchdahl, *Metaphysics and the Philosophy of Science* (Oxford: Basil Blackwell, 1969), 497.

[dxxx.] N. Kemp Smith, *Immanuel Kant's Critique of Pure Reason* (London: Macmillan Publishers Ltd., 1929) [A 643/B 672] Hereafter cited as Critique of Pure Reason.

[dxxxi.] Critique of Pure Reason [A 648/B 676]

[dxxxii.] G. Buchdahl, *Kant and the Dynamics of Reason* (Oxford: Basil Blackwell, 1992) 231. Hereafter cited as Buchdahl (1992).

[dxxxiii.] Buchdahl (1992), 157.

[dxxxiv.] G. Buchdahl, 'The concept of lawlikeness in Kant's philosophy of science' in *Proceedings of the Third International Kant Congress*, ed. L. W. Beck, 149-171. (Boston: D. Reidel Publishing Co.,1972) 157.

[dxxxv.] J. M.D. Meiklejohn, ed., *Kant: Critique of Pure Reason* (London: J.M. Dent & Sons Ltd.) 1934 B-edition, [A 648/B 676].

[dxxxvi.] C. Hempel, *Aspects of Scientific Explanation* (New York: Collier-MacMillan, 1965), 232. Hereafter cited as Hempel.

[dxxxvii.] Hempel, 247.

[dxxxviii.] Critique of Pure Reason, [A 647/B 675].

[dxxxix.] Critique of Pure Reason, [A 647/B 675].

[dxl.] Shepherd (1827), 126-7.

[dxli.] Shepherd (1827), 125.

[dxlii.] Shepherd (1827), 130-1.

[dxliii.] Shepherd (1827), 124.

[dxliv.] Shepherd (1827), 325, 232 and 138.

[dxlv.] Shepherd (1828), 624.

[dxlvi.] The only criticism that Shepherd makes in connection with the doctrine of Newton is aimed at her common sense counterparts. Shepherd criticizes the idea that the empiricist theory of representation of exterior objects by means of the direct perception of primary qualities is an inadequate interpretation of the basis for Newton's claim to objectivity in his method. Such as view of his inductive method, she rightly notes, would be 'puerile and unphilosophical'. This view is interesting given her wider philosophical views, but not the salient point for our purposes in this discussion. It is worth remarking upon, however, for it is a point in Shepherd remarked upon by John Fearn, who fails to grasp her meaning. Shepherd (1827), 289.

[dxlvii.] Shepherd (1827), [--].

[dxlviii.] Shepherd (1827), 278.

[dxlix.] Shepherd (1827), 278-9.

[dl.] Shepherd (1827), 279.

[dli.] Shepherd (1827), 281-2.

[dlii.] Shepherd (1827), 284.

[dliii.] Shepherd (1827), 114. Shepherd makes frequent references to both *Watts Logic* and *Whately❼s Logic* in her work.

[dliv.] Shepherd (1827), xii.

[dlv.] Shepherd (1827), 28 and 83. Shepherd clearly rejects Berkeley❼s principle that ✇*esse*❼ is ✇*percipi*❼. She writes that existence enables perception and not vice versa.

[dlvi.] Berkeley, 42.

[dlvii.] Shepherd (1827), 202.

[dlviii] Shepherd (1827), 199-201.
[dlix] Shepherd (1827), 202.
[dlx] Brown (1805), 42.
[dlxi] Shepherd (1827), 55.
[dlxii] Shepherd (1827), 199.
[dlxiii] Shepherd (1827),199.
[dlxiv] Shepherd is evidently aware of this. Shepherd (1827), 226.
[dlxv] It might be objected that for Berkeley, our ideas of objects are complexes of particular, perceived ideas. Hence, there is no gap between perceiving an idea and perceiving an object, because the latter simply involves the perception of a complex of sensible ideas. Shepherd, however, denies that representations of objects can be formed from 'sensations of sensible qualities' alone. This departure signals a fundamental difference between the theories of ideas of Shepherd and Berkeley.
[dlxvi] Berkeley, 50-51. The summary of Berkeley❼s master argument given here draws more generally on the extended discussion of the subject in his *Dialogues Concerning Natural Religion*.
[dlxvii] Berkeley, 43-4.
[dlxviii] Berkeley, 52.
[dlxix] Berkeley, 52-3.
[dlxx] Shepherd (1827), 216.
[dlxxi] Shepherd (1827), 215.
[dlxxii] Shepherd (1827), 208.
[dlxxiii] Shepherd (1827), 216.
[dlxxiv] Shepherd (1824), 137n.
[dlxxv] Brown (1805), On pp. 41-42. Brown writes,

> When Bishop Berkeley, not content with hesitating as to the grounds of our belief in an external world, boldly denied its existence, what dangerous consequences might have been supposed to flow from the denial! How absurd did moral virtue immediately become, to man, who was for ever in a state of solitude; and what magnificent arguments for the existence of a Deity were annihilated in the general desolation powered by a few propositions! These desolating propositions are, in the strictness and accuracy of mere usage completely unanswerable. No evil consequence indeed can flow from them; but it is only because they are at variance, not with strict demonstrative proof, but with that instinctive belief, which, as it is the ultimate source of all conviction, is paramount to demonstration. The instinct by which we consider the sensation of our mind, as marks of the existence of an external world, is too powerful to be weakened be any theory; and even the celebrated sceptic who opposed it, inconsistently but admirably pious and benevolent, was, at the time of his opposition so completely under its influence, as to deliver his theory professedly for the confirmation of those very free thinkers and atheists, whose actual nonexistence his theory implied.

[dlxxvi] Shepherd (1827), 199.
[dlxxvii] Shepherd (1827), 198.
[dlxxviii] Shepherd (1827), 18-20.
[dlxxix] Shepherd (1827), 67.
[dlxxx] Shepherd (1827), 135.
[dlxxxi] Shepherd (1827), 197-8.
[dlxxxii] George Berkeley, *The Principles of Human Knowledge,* A.A. Luce and T.E. Jessop (eds.), (London: Nelson, 1967), 41. Hereafter cited as Berkeley.
[dlxxxiii] Berkeley rejects Locke's view of abstract ideas, and seems to overlook what Locke says about general ideas. For recent discussions of general and abstract ideas in Locke and Berkeley, see John Yolton's *A Locke Dictionary* (Oxford: Basil Blackwell, 1993) and Sally Ferguson's 'Are Locke's Abstract Ideas Fictions?' In *The Review of Metaphysics* vol. 53 (September 1999), 129-140.
[dlxxxiv] Brown (1803), 267-8.
[dlxxxv] Shepherd (1827), xiv-xvi.
[dlxxxvi] Shepherd (1827), xii.
[dlxxxvii] Shepherd (1827), 203.
[dlxxxviii] Brown (1803), 265.
[dlxxxix] Shepherd (1827), 66-8.
[dxc] Shepherd (1827), 66-8. An analogy is drawn between the mixing together of sensibility and understanding in cognition and the mixing of colours to form a uniform mass of light. Shepherd

takes it that analysis enables us to distinguish the elements of our representations, just as analysis enables us to distinguish the various colours that together form light.

[dxci.] Shepherd (1827), 33-4.

[dxcii.] Shepherd (1827), 199-200.

[dxciii.] Shepherd (1827), 43n.

[dxciv.] Shepherd (1827), 76.

[dxcv.] The interpretation and assessment of Shepherd❼s reply to Berkeley in this paper differs from that of Margaret Atherton. Atherton passes a largely negative judgment on Shepherd❼s arguments. My positive judgment is based on the view that Shepherd❼s analysis of causation plays a central role in her response to Berkeley. See Margaret Atherton, ✇Lady Mary Shepherd❼s Case Against George Berkeley❼ in the *British Journal for the History of Philosophy* vol. 4 no. 2, 347-366.

[dxcvi.] As Harry Bracken notes in *The Early Reception of Berkeley❼s Immaterialism: 1710-1733*, Berkeley❼s early critics typically failed to address his position seriously. As Luce remarks that 'But for Scotland Berkeley might have died the second death. During his lifetime and for the greater part of the first century after his death Scottish philosophers took charge of him, and placed and kept him on the map.' Still, most of Berkeley❼s early critics merely sought to ridicule him, so that by the mid-eighteenth century ✇Berkeley already has a reputation ✍ he has already been called a sceptic, atheist, idealist, egomist and fool.❼ Not only was the ridiculing of Berkeley❼s position unattractive in its own right, but the early critics relied on fairly crude arguments to show that his philosophy led to absurdity. Samuel Johnson made the notorious remark ✇I refute Berkeley *thus*❼ and then kicked a rock. See A.A. Luce, ✇The Berkelian Idea of Sense❼ Aristotelian Society Supplementary Volume, XXVII (1953), 7. See also Harry Bracken, *The Early Reception of Berkeley❼s Immaterialism: 1710-1733* (The Hague: Martinus Nijhoff, 1959), 89. Hereafter cited as Bracken.

[dxcvii.] Shepherd (1827), xiv-xvi.

[dxcviii.] Shepherd (1827), 279.

[dxcix.] Shepherd (1827), 280.

[dc.] Shepherd (1827), 291.

[dci.] Shepherd (1827), 285.

[dcii.] Shepherd (1827), 289.

[dciii.] Shepherd (1827), 329.

[dciv.] Shepherd (1827), 335.

[dcv.] Shepherd (1827), 234-7.

[dcvi.] Shepherd (1824),172-3 and Shepherd (1827), 267-8.

[dcvii.] Shepherd (1827), 347.

[dcviii.] Shepherd (1827), 347-8.

[dcix.] Hill Burton, 138.

[dcx.] Hill Burton, 138-9.

[dcxi.] John Hill Burton, *Political and Social Economy: Its Practical Applications* (New York: Augusts M. Kelley, 1970) 138. Hereafter cited as Hill Burton.

[dcxii.] Hill Burton, 138.

[dcxiii.] John Hicks, *Causality in Economics* (New York: Basic Books, 1979), x-xi. Hereafter cited as Hicks.

[dcxiv.] Hicks, x.

[dcxv.] Hicks, xi.

[dcxvi.] Hicks, 122.

[dcxvii.] Alfred S. Eichner, 'Why Economics is not yet a Science' 205-240 in Alfred S. Eichner, ed. *Why Economics is not yet a Science* (New York: M.E. Sharpe, 1983) 209.

[dcxviii.] Brandreth, 118. See also pages 117-8. Babbage was just one of the many mathematically inclined friends of Mary Shepherd. Shepherd's interest in algebra and philosophy of mathematics apparently grew with age. Several mathematically inclined individuals appear to have graced her circle, and several had ties to Scotland. For example, a significant friendship existed between Mary Shepherd and Mary Somerville. As Shepherd's daughter recollects: 'My mother's admiration of Mrs. Somerville's power of deep perception and accurate reasoning was very great; and the quiet charm of her manner and voice, gave to this admiration a great and friendly attraction.'Somerville, however, was not moved by abstract questions and had a great desire to be 'common-place' in conversation. 'My mother's own great power' her daughter writes, 'lay in abstract thought of infinite comprehensiveness, which was probably altogether out of Mrs. Somerville's intellectual field, whilst my mother had never followed out any scientific concretions from their beginning to their latest reach, nor ever sought to do so; but she liked to pick up from such friends as Mrs. Somerville, all possible beauties and curiosities in scientific results...' (119) While Somerville may not have been

moved by philosophical problems, there is direct evidence that Mary Shepherd shared Somerville's interest in mathematical problems. Mary Somerville's dislike of philosophical controversy seems to have centred on the very points relating to constructions of language and theology that Mary Shepherd was so eager to take up. Brandreth writes, 'Of her desire to be simply common-place in conversation, an illustrating anecdote may also prove a useful hint to the very obtrusive critics of the Bible, who think that the statements there ought to be scientifically correct according to modern knowledge. One of us once asked her, 'why, in answering our questions from time to time, do you always say "The sun goes round the earth," instead of the true way; 'and she replied, 'Because it is best always, when it can lead to no mistake, to speak in the ordinary language of the time.'

[dcxix.] Shepherd (1827), 21, 110-111, 248-49.

[dcxx.] Shepherd (1827), 248-49.

[dcxxi.] Shepherd (1827), 250.

[dcxxii.] Shepherd (1827), 71.

[dcxxiii.] Shepherd (1827), 110-11.

[dcxxiv.] Shepherd (1827), 247.

[dcxxv.] Shepherd (1827), 249.

[dcxxvi.] Shepherd (1827), 21.

[dcxxvii.] Mary Shepherd. ✇Observations on Mr. Fearn❼s *Lines of the Human Mind*❼, in *Parriana: or Notices of the Rev. Samuel Parr, L.L.D..* Edited by E.H. Barker. London: Henry Colburn, 1828, 624-627, and ✇Lady Mary Shepherd❼s Metaphysics❼ in *Fraser❼s Magazine for Town and Country*, vol. V, no. XXX (July 1832). 697-708. John Fearn: ✇Reply to the Criticisms of Lady Mary Shepherd's on the 'First Lines': With Observations on her Ladyship's Views with regard to the Nature of Extension as contained in her *Essays on the Perception of an External Universe'*, in *Parriana: or Notices of the Rev. Samuel Parr, L.L.D..* Edited by E.H. Barker (London: Henry Colburn, 1828), 628-650.

[dcxxviii.] John Fearn, 'A letter to Professor Stewart, on the objects of general terms, and on the axiomatical laws of vision' (London, 1817).

[dcxxix.] Shepherd (1832), 706.

[dcxxx.] Shepherd argues against Fearn's view in her 1827 treatise. Fearn apparently doesn't concede the point.

[dcxxxi.] Fearn, 631-32.

[dcxxxii.] Shepherd (1827), 386.

[dcxxxiii.] Shepherd (1832), 702. See also Shepherd (1827), Essays IV and XIII.

[dcxxxiv.] Shepherd (1827), 93.

[dcxxxv.] Shepherd (1827), 69.

[dcxxxvi.] Shepherd (1827), 68-9.

[dcxxxvii.] *Camera obscura* devices were popular in the nineteenth century as tourist attractions. Edinburgh, for example, had an observatory on Calton Hill. There, in the early eighteenth century, Thomas Short built his 'Gothic House', where he stored scientific instruments made by his family, and charged admission to those wishing to see through his telescopes and other instruments. Thomas Short died in 1788, and in 1827, a woman named Maria Theresa Short, who claimed to be Thomas Short's daughter, returned to Edinburgh to claim his scientific instruments as her inheritance. For many years she ran a 'Popular Observatory' there, eventually moving to the site on Edinburgh's Castlehill where Edinburgh's *camera obscura,* now known as 'Outlook Tower', remains to his day.

Cf. Maria Short/ Patrick Geddes and the Outlook Tower. (Andrew Johnson and Tony Millar?)

[dcxxxviii.] It is interesting to note that James Mill, a friend of Mary Shepherd, translated Charles Villers' book *The Reformation* in 1805 while studying under Dugald Stewart in Edinburgh. Mill approves of Villers critical appraisal of the papal system, but disapproves of Villers' disrespectful remarks on the Bible and of his being a Kantian. See Bain, 51-52.

[dcxxxix.] Wellek, 127 [?].

[dcxl.] Shepherd (1832), 702.

[dcxli.] Robert Blakey, *A History of the Philosophy of Mind*, vol. ix (London: Longman, Brown, Green, and Longmans,1850), 39-46 and 609-10.

[dcxlii.] Blakey, 40.

[dcxliii.] Blakey, 44-46.

[dcxliv.] Shepherd (1832), 701.

[dcxlv.] Shepherd (1827), 260.

[dcxlvi.] Shepherd (1827), 256.

[dcxlvii.] Shepherd (1827), 110-11.

[dcxlviii.] Shepherd (1827), 252.

[dcxlix] Shepherd (1827), 252-54.
[dcl] Shepherd (1827), 243-44.
[dcli] Shepherd (1827), 177-8n
[dclii] Shepherd (1827), 94.
[dcliii] William Hamilton, *Lectures on Metaphysics*, (ed) by Rev. H.L. Mansel and John Veitch (Edinburgh: William Blackwood and Sons, 1861), 393-99.
[dcliv] Shepherd (1832), 702 and 707, respectively.
[dclv] Shepherd (1827), 246-48.
[dclvi] Kant, Immanuel. *Critique of Pure Reason.* Translated by Norman Kemp-Smith. London: MacMillan, 1929. B278. Hereafter cited as *Critique of Pure Reason*.
[dclvii] *Critique of Pure Reason,* B276.
[dclviii] *Critique of Pure Reason,* A 371.
[dclix] Shepherd (1832), 71-2.
[dclx] Shepherd (1827), 66-68.
[dclxi] Shepherd (1827), xiii, 314, 170, 323.
[dclxii] Shepherd (1827), 290.
[dclxiii] Hence, Shepherd supplements the psychologism of Villers *camera obscura* with a justification of how *knowledge* of external objects is possible, an account that invokes *a priori* relations such as cause and effect to illustrate the rule-based nature of judgements about external existence. It is also possible that Shepherd read other works on or by Kant, for example, Willich's *Elements of the Critical Philosophy*. Although Willich's book was said to contain very little original thought, the work has merit. For it compiles together summaries of Kant's works and the best available digest and introduction to Kant, the one written by Schultz. It may be a ✇mere piece of bookmaking❼, as one critic asserted, but Willich's book pulled together the diverse parts of Kant❼s vast system in a meaningful assembly, including such presumably hard to find bits from his natural philosophy.
[dclxiv] Shepherd, (1827), 59.
[dclxv] Shepherd (1827), 27-28.
[dclxvi] There may never be a definitive answer to extreme forms of sceptical idealism, of course, but the answers that Kant and Shepherd have given are among the most able and compelling. They have more to offer than just the weak form of Berkeleian idealism, namely, of showing only that there is a world that is 'not me'. William Harper, 'Kant on Space, Empirical Realism and the Foundations of Geometry' in *Topoi 3* (Dordrecht: D. Reidel Publishing Co., 1984), 143-161.
[dclxvii] *Critique of Pure Reason,* A 371.
[dclxviii] Immanuel Kant, *Critique of Pure Reason,* translated by Norman Kemp-Smith (London: MacMillan, 1929), A 368. Hereafter cited as Critique.
[dclxix] Critique, A 369.
[dclxx] Henry Allison, *Kant❼s Transcendental Idealism* (New Haven: Yale University Press, 1983), 14-34.
[dclxxi] Brown, 1803, 265.
[dclxxii] Shepherd, 1827, 66-68.
[dclxxiii] Shepherd (1827), 202.
[dclxxiv] Shepherd (1824), 170-71.
[dclxxv] Shepherd (1827), 72-73.
[dclxxvi] Shepherd (1827), 231-232. See also page 259.
[dclxxvii] Cf. Shepherd (1827), 168. Think of a tap that drips water. The variety in the dripping sounds, the independence of each drip and the conscious sensation of the dripping water may all be detected by the senses. In this case a pattern of repetition is detected, but perhaps not as a primary quality. It is important to note that Shepherd does not rest her argument for the existence of exterior objects on the representation of primary qualities through their detection in secondary ones.
[dclxxviii] Shepherd (1827), 121. In a similar passage, Shepherd claims that ✇...the independancy which the causes of the objects of sense have of the capacity to general sensation is proved by their affecting changes of qualities, of which the mind has no conscience.❼
[dclxxix] Shepherd (1827), 43.
[dclxxx] Shepherd (1827), 76.
[dclxxxi] The correspondence between the Shepherds and the Babbages spans at least twenty years, until near the time of Mary Shepherd's death.
[dclxxxii] Brandreth, 105-06.
[dclxxxiii] Shepherd (1827), 261.
[dclxxxiv] Shepherd (1827), 294-95.
[dclxxxv] Letter from Mary Shepherd to Charles Babbage, 10 July 1836, Babbage Correspondence, BL, MSS 37189 f. 383

dclxxxvi. Letter from Mary Shepherd to Charles Babbage, 8 February 1836. BL, Babbage Correspondence MSS 37189 ff 297.
dclxxxvii. Letter from Mary Shepherd to Charles Babbage 10 July 1836, Babbage Correspondence, BL, MSS 37189 f. 383. Unfortunately, Shepherd does not spell out the context fully. What she does say is this:

In that manner it [the roots of -- Quantities] is fraught with meaning & instruction concerning the proportional error in the data contained in the question; - whilst also it keeps to the analogy expressed by the roots of other algebraic quantities, as well as that in like manner with them they can be first translated into mathematical language, & 2dly applied to concrete things - without which perception of ideas under the terms of calculation, there could not be any security in their results.

dclxxxviii. Shepherd (1832), 703.
dclxxxix. Shepherd (1832), 703.
dcxc. Shepherd (1827), 38.
dcxci. University of Edinburgh, *Charters, Statutes, and Acts of the Town Council and the Senatus 1583-1858*, Alexander Morgan (ed.), (Edinburgh: Oliver and Boyd, 1937) 167-8. Hereafter cited as Morgan.
dcxcii. Morgan, 167-8.
dcxciii. R.Carlile, *Address to Men of Science; calling them to Vindicate Truth from the Foul Grasp of Superstition* (London: R. Carlile, 1821). Hereafter cited as Address. Carlile's *Address to Men of Science* was written in prison in May 1821, the fourth month of the imprisonment of his wife for assisting him with his publishing business.
dcxciv. Address, 4.
dcxcv. Address, 5.
dcxcvi. Address, 43.
dcxcvii. Address, 44.
dcxcviii. Sydney Evans, 'Theology', in *University of London and the World of Learning, 1836-1986,* F.M.L. Thompson ed. (London: The Hambledon Press, 1990, pp. 147-160), 148. Hereafter cited as Evans.
dcxcix. Evans, 148. The primary source is H.H. Bellot, *Victoria County History for Middlesex,* vol. 1.
dcc. Bain, 247.
dcci. Bain, 247.
dccii. Shepherd (1827), 78.
dcciii. I cannot help but wonder if Shepherd is making peace with Mill here.
dcciv. Overton, 25-6.
dccv. Lochhead, 104. Take note of Jedburgh Abbey, Primrose family, and Dalmeny area connections. Keble was among those at its [St. Columba's?] consecration in 1844, and it was the only church in Scotland in which Keble, who venerated Scottish Episcopacy, officiated
dccvi. Lochhead, 108.
dccvii. Alf Härdelin, *The Tractarian Understanding of the Eucharist* (Uppsala: Boktryckeri Aktiebolag, 1965), 148. Hereafter cited as Härdelin. The original source for H.J.Newman's Sermon 172, entitled 'On the Lord's Supper', dated July 13, 1828, is Birmingham, The Oratory, Edgbaston, (A.50.3).
dccviii. John Henry Overton, *The Anglican Revival* (London: Blackie and Son Ltd., 1897), 43. Hereafter cited as Overton.
dccix. Bertram Windle, *Who's Who of the Oxford Movement* (London: The Century Co., 1926), 140. Hereafter cited as Windle.
dccx. R.W. Church, *The Oxford Movement, 1833-45* (University of Chicago Press, 1970), 115. Hereafter cited as Church.
dccxi. Church, 117
dccxii. Letter from Richard Whately to Dr. Tyler, 30 September 1836, in *Life and Correspondence of Richard Whately*, Jane Whately, ed. (London: Longmans, Green, and Co., 1866) vol. 1, p. 356. Hereafter cited as Life of Whately.
dccxiii. Letter from Richard Whately to Dr. Tyler, 30 September 1836, in *Life of Whately*, vol. 1, 355.

[dccxiv] Brent, 150.
[dccxv] Brent, 150-1.
[dccxvi] Letter from Richard Whately to Dr. Arnold, 5 January 1838, in *Life of Whately*, vol. 1, 411.
[dccxvii] J. H. Newman, *The Idea of a University* (London: 1852), Discourse VI, 'Knowledge Viewed in Relation to Learning', s.9.
[dccxviii] J. H. Newman, *The Idea of a University* (London: 1852), Discourse VI, 'Knowledge Viewed in Relation to Learning', s.9.
[dccxix] Windle, 56. Hereafter cited as Windle. In the early days of the Oxford movement, Newman and Whately were on cordial terms. Newman eventually broke with the Anglican Church and became a Catholic, he and Whately became divided. Newman may have understood this parting as hypocrisy on Whately's part, since Whately always professed neutrality toward those of different denominations. What Newman may not have realized was that Whately's primary concerns were for the welfare of the national church as an institution. For Whately, the problem over Newman's open break with the Anglican Church was that his departure created fissures in a national church already undergoing reform.
[dccxx] Church, 107.
[dccxxi] Todhunter, Vol. II, 122. Charles Babbage, Reflections on the Decline of Science, (B. Fellowes, 1820), 24. Hereafter cited as Decline.
[dccxxii] Todhunter, Vol. II, 328-9. I am here assuming that an 1845 remark to Herschel is consistent with Whewell's positiojn in the 1830s..
[dccxxiii] 394 ff., 389-91. His arguments against the plurality of worlds, for instance, were directly motivated by theology -- heaven, thought Whewell, must not be conceived by analogy to an inhabited, material planet, and this planet must not be conceived as a worse world by analogy, a place of sin in relation to another inhabited, perfect planet.[letters]
[dccxxiv] William Whewell, On Astronomy and General Physics, p?.
[dccxxv] I. Todhunter, *William Whewell, D.D., Master of Trinity College, Cambridge: An Account of his Writings with Selections from his Literary and Scienitifc Correspondence, Vols. I and II* (London: MacMillan and Co., 1876), Vol. II, 343. Hereafter cited as Todhunter.
[dccxxvi] William Whewell, Open Letter to Charles Babbage, 1837.
[dccxxvii] D.A. Winstanley, Early Victorian Cambridge, C.U.P., 1940.
[dccxxviii] Charles Babbage, Passages from the Life of a Philosopher (London: Dawsons of Pall Mall) 1968, 57
[dccxxix] Hyman, 52. Original source. The Latin original of the quote is 'Aut haec in nostros fabricata est machina muros. Aut aliquis latet error.' Peel to Croker 8 March 1823: Correspondence and Diaries of John Wilson Croker, i, 262-3. (London: John Murray) 1884.
[dccxxx] Hyman, 202. 1 September 1844, Camden St. BL Add. Ms. 37,193, f 110.
[dccxxxi] David Kean, *The Author of the Analytic Engine* (Washington, D.C.: Thompson Book Company) 1966, 9. This Lee sounds familiar, follow up.
[dccxxxii] Hyman, 233-7. Hyman writes misogynistically about Ada Augusta.
[dccxxxiii] Hyman, 202. The original source is E. Kintner, The Letters of Robert Browning and Elizabeth Barrett Browning, Harvard, 1968. See also Brandreth, 176-180, who explains that Mary Shepherd and her family were introduced to the Barretts of Hope End while they were staying at Malvern Wells. Mary Shepherd seems to have become something of a mentor. Elizabeth Barrett's father was in debtor's prison and her mother was dying, and soon did die, of consumption. Elizabeth Barrett, whose learning was described as 'vast and accurate' and though 'original and profound' taught all of her younger siblings and managed the home with the help of her younger siblings. Barrett wrote something on Mary Shepherd's philosophical work, which would be interesting to read if it could be found. Note that in 1830, around the time that the Shepherd's were summering in Malvern, the Babbage is in Malvern too. He had been introduced to a 'talented but slightly eccentric young lady'. See Hyman 99: 'Lonely without Georgiana, Babbage was considering remarrying and prudently enquired about a talented but slightly eccentric young lady in the vicinity of Malvern...Shortly afterwards Babbage stayed at Well House, Malvern. But whoever the lady was nothing came of it.' If Babbage's love interest was Miss Barrett, she did not succumb to his charms, despite her rather straightened and difficult circumstances. Herself a poet of some ability

even in her early years, she married another poet, Robert Browning, and became known as Elizabeth Barrett Browning.

[dccxxxiv.] Decline, 24.

[dccxxxv.] Decline, 45.

[dccxxxvi.] Over the years, Babbage faced much opposition, enough to make him bitter, heartbroken and half-crazy in later life. Only his true friends had always stood by him, and they did so despite the charges of his many critics. Babbage lived a long life, longer than most, and in the end, it was his and Henry John Shepherd's old friend, Edward Ryan, who oversaw his affairs at his death. Another faithful, the Duchess of Somerset, brought the only carriage to the small procession that followed his remains to the grave. It was a long way from the Saturday evening dinner parties where Charles Babbage had entertained two or three hundred of London's society at a time.

[dccxxxvii.] Then, as now, there were good arguments on either side, although time may be showing how Babbage was so innocently naive and removed from reality in a way that some of his more worldly and political friends were not. Others had much more direct experience and perhaps realistic views of the social and political machinery around them, and saw the potential for abuse in government control over scientific creativity. For the centuries have shown that once within the cogs of the government machine, creativity is reduced to the vision and understanding of the scientific bureaucrats and administrators that prevented Babbage from gaining financial support for his Difference and Analytic Engines.

[dccxxxviii.] Unfortunately, Babbage's arguments for intervention are only compelling on the very unrealistic assumption that individuals with an ability for the most advanced and discerning appreciation of creativity and science would be designing and funding science and technology programs. Moreover, the other assumption that Babbage makes in error is that the administrators will make judgements in some ideal context in which the interests of the common good are not only grasped, but also successfully implemented. The final irony is that Babbage must be considered one of the best examples of how important science advances are engendered when individual minds germinate ideas in a creative, independent, non-interventionist mode in a scholarly setting. One wonders, however, what Charles Babbage would have to say about IBM and the use to which computers have been put since his times. Still more curious would be the reaction to the present day government-business partnerships and the 'new university'. For, according to Babbage's expectations for his engines, they would not be used to make money; rather, they would only be used to serve the common good. He would certainly never have sanctioned their use to oppress and condition people in the extreme form of conservative capitalism implicit in the vision of those adherents to globalization and knowledge economy.[dccxxxviii.] As far as science and progress went, they were interested in truth, and firmly convinced that God's light would shine through in the discovery of truth. Science was a sacred key to a better world on this earth. Properly understood it would lead to progress and enlightenment. [Science, philosophy, and art can and should all be advanced without fetters. Today the sacred cow that cannot be criticised is the capitalism-globalization liaison -- then it was religion and religious dogma. In both cases, control over the institution is a means of preventing the challenges that accompany the intellectual and humanistic flourishing that we call *life itself,* or at least, the life of the mind. This flourishing -- not profit -- must be the end of human life. In both eras we see that there are values to be preserved and defended in such times of change.

[dccxxxix.] Letter from Mary Shepherd to Charles Babbage, 1831 or 1832, Babbage Correspondence, British Library MSS 37188, f. 121.

[dccxl.] The work in question was published anonymously in 1819 under the full title *Enquiry Respecting the Relation of Cause and Effect: In Which the Theories of Professors Brown, and Mr. Hume are Examined; and With a Statement of Such Observations as are Calculated to Shew the Inconsistency of These Theories; and From Which a New Theory is Deduced, More Consonant to Facts and Experience. Also A New Theory of the Earth, Deduced from Geological Observations* (Edinburgh: James Ballentyne, 1819).

[dccxli.] Oddly, there is no direct mention of causality in the 1819 treatise on causality. The Preface does remark that the objective reality of the causal relation is assumed throughout the natural

history of the earth. The fact that the work exhibits a religious bias is not telling, since this is a prevailing sentiment of the day. In the absence of further clues, it would be difficult to decide the authorship of the natural history on the basis of this evidence.

[dccxlii.] Letter from Mary Shepherd to Charles Babbage, 1831 or 1832, Babbage Correspondence, British Library MSS 37188, f. 121.

[dccxliii.] Ninth Bridgewater Treatise, 123.

[dccxliv.] This may compare in their minds to programming a machine to skip one or more of its steps under well-defined conditions.

[dccxlv.] Letter, Sir Sam_1839.

[dccxlvi.] Passages, 2 (i.e., in 1864). Babbage is referring to an article in the Proceedings of the Royal Society, 26 May 1859.

[dccxlvii.] There is a historical irony with respect to the social sciences that is worth mention here. For the combined method of inductive generalisation, objectivity and necessity in representation and subsumption under general laws may go a long way to explaining the characteristics that demarcate good science, but they were not implemented historically. Moreover, the Kantian view of adequacy in scientific theory seems too stringent in practice, so that much science advances with little heed for standards. This is not an argument to show that much progress is made towards truth under the latter plan, however. However, even if Kant's methodology represents a kind of methodological ideal, it needs further qualification and perhaps a set of 'informal' rules of thumb, such as have emerged in philosophy of science in recent years. Kant would doubtless object at the potential for introducing error, and beg us to evaluate the most promising of the sciences by in terms of the Kantian a priori and so on, as soon as possible. But even without such a rigorous approach, we can ask whether the sciences that emerged under the careful planning of Shepherd and her circle, specifically, political economy, has ever met the standards set out for science, either by the founders of the science or by more recent philosophy of science?

Much the same can be said of all of the social sciences, which proceed by collecting and examining patterns in data, ignoring the criteria of good science to a serious extent and introducing fallacy, violating the most informal criteria ever set out for science. They proceed mostly in tandem with rhetoric fabricated by bureaucrats and almost never b y the principles of truth and good science set out by the likes of Bacon, Kant, or Shepherd and her circle. What progress, we can ask, has there been if the fastest growing fields are ones in which the principal proponents have no ability or interest in following good scientific method? The irony then, is that bad argument and rhetoric are being used by bureaucrats to advance science -- statistic after statistic is advanced and given its dubious interpretation -- and this used as a basis for designing and defending social policies that serve the interests of those in power. As capitalism goes wild under the global vision, the end results are completely out of anyone means to apprehend, yet countless imperatives are offered to justify a short-term result in the interest of those with the power and money. Arguments are made for the sake of hoodwinking and controlling the general populace. The truth and humanism are the last things on the table guiding science or the future of humanity. Thus, rather than good science and truth leading the way as these thinkers hoped. So the jury must still be out on Shepherd and Babbage's vision of a way to the future. Perhaps in the end, science and (at least some) enlightened ideals could lead to a vision of a world governed by truth and genuinely humanistic principles as the rationalists had hoped.

[dccxlviii.] Shepherd (1827), 397-8.

[dccxlix.] Shepherd (1827), 396.

[dccl.] *Dictionary of National Biography* under Tait.

[dccli.] Stewart J. Brown, *Thomas Chalmers and the Godly Commonwealth in Scotland* (Oxford University Press, 1982), 330. Hereafter cited as Stewart J. Brown.

[dcclii.] Fraser, 122-3.

[dccliii.] Fraser, 122-3.

[dccliv.] Fraser. 122-3.

[dcclv.] Brandreth, 55.

dcclvi. Brandreth, 53-4. Mary Elizabeth Brandreth reports that her aunt preferred her own Anglican tradition against the views of Chalmers. For example, she expressed her support for the petition in the Anglican Litany against 'sudden death' in one discussion with Chalmers.

dcclvii. Fraser. 122-3.

dcclviii. Stewart J. Brown, 342.

dcclix. Alexander Morgan ed., University of Edinburgh: Charters, Statutes, and Acts of the Town Council and the Senatus, 1583-1858 (Edinburgh: Oliver and Boyd, 1937). Hereafter cited as Morgan.

dcclx. Morgan, 281.

dcclxi. J.M. Barrie, *An Edinburgh Eleven: Pencil Portraits from College Life* (London: Hodder and Stoughton, 1896), 13. Another point worth mention with regard to the Primrose family concerns the legacy of university involvement that was left to later generations of the family. The fifth Earl of Rosebery, who became famous for his marriage to Hannah Rothschild and for his short tenure as Prime Minister, who also held the position of Lord Rector of Scotland's Universities. While holding this post, he had occasion to delight the Edinburgh undergraduates with his address on 'Patriotism.'

Such is the delight of the Scottish students in Lord Rosebery, that he may be said to have made the triumphal tour of the northern universities as their Lord Rector; he lost the post in Glascow lately through a quibble, but had the honour with the votes. His address to the Edinburgh undergraduates on 'Patriotism' was the best thing he ever did outside politics, and made the students his for life. Some of them had smuggled into the hall a chair with 'Gaelic chair' placarded on it, and the Lord Rector unwittingly played into their hands. In a noble peroration he exhorted his hearers to high aims in life. 'Raise your country,' he exclaimed (cheers); 'raise yourselves (renewed cheering); raise your university' (thunders of applause). From the back of the hall came a solemn voice, 'Raise the chair!' Up went the Gaelic chair.

Like his ancestors, Archibald Primrose, the fifth Earl of Rosebery, placed a high premium on his patriotic duties and on the welfare of the universities of his country. While the family heritage of patriotism extends at least as far back as Sir Archibald Primrose, interest in the welfare of the university can be traced back to Mary Shepherd and her siblings.

dcclxii. Gillian Sutherland, 'The Plainest Principles of Justice: The University of London and the Higher Education of Women' in *University of London and the World of Learning, 1836-1986,* in F.M.L. Thompson ed. (London: The Hambledon Press, 1990, pp. 35-51), 35.

dcclxiii. Horn, 191.

dcclxiv. Jacyna, 44. [Get the date.]

dcclxv. Neil Campbell, R. Martin and S. Smellie, *The Royal Society of Edinburgh (1783-1983): The First Two Hundred Years*. (Royal Society of Edinburgh, 1983). On page 30 it is remarked that, 'For more than 150 years, the R.S.E. was a men's Society and although this was never explicitly admitted Council on one occasion ungallantly decided to exclude ladies from their conversazione.' On page 50, the authors write that until the late nineteenth century 'the R.S.E. was a man's Society with women sometimes barred from its conversaziones and permitted to use the Library only after permission had been granted by Council.'

dcclxvi. Grant, 354.

dcclxvii. Horn, 191. Horn goes on to mention the eventual introduction of 'ladies lectures' in the late 1860's with some apparent regret. Unlike Horn, Grant is enthusiastic about the participation of women. See Grant, 157-163.

dcclxviii. Fraser, 122-3. Fraser writes of Cramond, 'There I met persons of note, mostly Free Church clergymen and laymen: Welsh, my old professor, in the last year of his life, Candlish, the brilliant and versatile ecclesiastic, next in succession to Chalmers; and the philanthropic Guthrie, along with Chalmers and Caird, one of three illustrious Scottish preachers in the nineteenth century. Among the laymen Sir David Brewster was foremost.'

dcclxix. D. B. Horn, *A Short History of The University of Edinburgh: 1556-1889*. (The University of Edinburgh Press,1967), 190. The entire passage runs as follows: 'The General Council had no

doubt that their University should establish an examination for candidates from the middle and upper schools of Scotland. Thus was instituted in 1865 the system of local examinations, intended to supply a common test of attainment both for pupils of public schools [in Scottish sense] and for those privately educated. Although this proved a great success for many years, it did not really fulfil the hopes of its promoters - out of a total of 891 candidates who were examined at forty-seven centres in 1883, 746 were girls.' Hereafter cited as Horn. In contrast to Horn's account, Alexander Grant's *The Story of The University of Edinburgh* is quite positive about the advancement of women. Grant writes that the system of local examinations started by the University of Edinburgh 'has proved a welcome stimulus not only to schools, but to many private Students, especially of the female sex. In fact it is remarkable, as results show, that the University of Edinburgh Local Examinations have been chiefly useful in promoting the solid education of girls. During the present year the University has sent down its examination papers to 47 centres. The total number of candidates was 891, of whom 746 were girls.' Grant, 157-8.

[dcclxx.] Horn, 191-2.

[dcclxxi.] Alexander Campbell Fraser, 'Course on Mental Philosophy' in *Introductory Lectures of the Second Session,* 46-47 (Edinburgh Ladies Educational Association, 1868). The Edinburgh Ladies Educational Association changed its name to the Association for the University Education of Women.

[dcclxxii.] Mary Shepherd, *An Essay upon the Relation of Cause and Effect Controverting the Doctrine of Mr. Hume Concerning The Nature of that Relation; with Observations upon the Opinions of Dr. Brown and Mr. Lawrence, Connected with the Same Subject* (London: T. Hookham,1824). Hereafter cited as Shepherd (1824). Mary Shepherd, *Essays on the Perception of an External Universe and Other Subjects Connected with the Doctrine of Causation* (London: John Hatchard and Son,1827). Hereafter cited as Shepherd (1827). Mary Shepherd had two articles published as part of a philosophical exchange with John Fearn. Mary Shepherd, 'Observations on Mr. Fearn's *Lines of the Human Mind*', in E.H. Barker (ed.), *Parriana: or Notices of the Reverend Samuel Parr, L.L.D.* (London: Henry Colburn, 1828), 624-27. Hereafter cited as Shepherd (1828). Mary Shepherd, 'Lady Mary Shepherd's Metaphysics' in *Fraser's Magazine for Town and Country*, vol. v, no. xxx (July 1832), 697-708. Hereafter cited as Shepherd (1832). The work in question was published anonymously in 1819 under the full title *Enquiry Respecting the Relation of Cause and Effect: In Which the Theories of Professors Brown, and Mr. Hume are Examined; and With a Statement of Such Observations as are Calculated to Shew the Inconsistency of These Theories; and From Which a New Theory is Deduced, More Consonant to Facts and Experience. Also A New Theory of the Earth, Deduced from Geological Observations* (Edinburgh: James Ballentyne, 1819).

[dcclxxiii.] Marion Lochhead, *Episcopal Scotland in the Nineteenth Century* (London: John Murray, 1966), 118. Hereafter cited as Lochhead.

[dcclxxiv.] Bishop Forbes, for example, who had emphasized the subjective mystery of the Eucharist and the limits of intellectual argument, was accused by his fellow Bishops of teaching a Roman interpretation of the doctrine that 'We are in Christ and Christ in us'. According to this Catholic interpretation, learned from Keble and Pusey, the adoration of Christ in the Eucharist was seen as inseparable from the adoration of the Sacred Manhood.[dcclxxiv.] According to Forbes, the divine Presence, while not possible through transubstantiation, was a mystery. But Forbes' Episcopal colleagues, particularly, Charles Wordsworth, rejected this as an official Episcopal view of the Eucharist. Forbes was publicly forced to 'clarify' his description of the Eucharist to meet with emerging standards of interpretation. Forbes invoked the empiricist notion of causality that had caused so much grief and controversy for the church and university in Scotland. As Lochhead remarks in her description of Forbes, in his clarification 'one can almost catch the hesitancy of voice, the tension in his hearers' as Forbes approached the matter of the Eucharist as a philosophical problem. Bishop Forbes, who reminds his listeners that he speaks with 'great reserve and tenderness,' turned to the business of the intellectual foundation for the Eucharist. [dcclxxiv.] As requested, his revised, official stance on the sacrament was clarified, and Forbes pronounced that the doctrine of the Eucharist was philosophically insufficient, since the effect could not be greater

than the cause. How could 'that which is not the Body of Christ produce the effect of the Body of Christ'? As Lochhead points out, 'The theory was more difficult than the mystery', and for many Anglicans, the philosophically respectable teaching 'fell short of that of the Scriptures, of the fathers, of the great Anglican divines of the seventeenth century, of the Liturgy.[dcclxxiv.]

[Forbes and Whewell]

Thus, Forbes and others who had emphasized the *subjective* awareness of Christ in the Sacrament ends by supplying an official statement that places emphasis on the unintelligibility of *objective* Presence. The revised analysis falls in line with the mid-nineteenth century emphasis placed on empiricist definitions of causality in rationalist discussion of the objective Eucharistic Presence. The official version of the mystery, it seems, was to be consistent with secular interpretation and based on a revised understanding of the manner and action of empirical causes. And the interpretation was one that could be rationally accepted by Anglicans throughout Britain, one that would unify the Anglican Church, set its doctrines about objective causality on a rational footing, and be accepted and defended by all. Institutional unity of the Anglican Church was paramount, and the empiricist doctrine of causality had finally been made to serve that unity.

[dcclxxv.] Lochhead, 103. See William Perry, *The Oxford Movement in Scotland* (Cambridge University Press) [?].

[dcclxxvi.] Härdelin, 151-2.

[dcclxxvii.] The book is exceedingly rare, and peculiar in certain respects. The first pages of the book include advertisements that suggest an American connection to either Francis Wayland or Laurens Hickok. Oddly, these ads, as well as the short introduction, are set in a font, font size and paper that differs from that in the remainder of the book. The book is printed in Paisley, Scotland, and makes reference to 'Burnett's Essays', both of which suggest a Scottish connection. Yet there is a London publisher for the book as well, and this suggests an English source. Finally, the topic of the work, given the later works of the same title and subject, suggest connections to both Oxford movement and to Scottish theological debate around the Eucharist. In short, when the clues are taken together, they serve to confuse the reader rather than to offer a clear statement on authorship. [Forbes, Tait, Whewell, Shepherd?]

[dcclxxviii.] *Philosophy of Theism* (London: Ward and Co. and Glascow: J&D Croll, 1857), 154. Hereafter cited as *Philosophy of Theism.*

[dcclxxix.] *Philosophy of Theism*, vi.

[dcclxxx.] *Philosophy of Theism*, vi-vii.

[dcclxxxi.] Wilfred Ward, *William George Ward and the Catholic Revival* (London: Macmillan and Co., 1893). See Chapter XIII. Hereafter cited as Wilfred Ward.

[dcclxxxii.] Wilfred Ward, 322.

[dcclxxxiii.] Wilfred Ward, 322-3

[dcclxxxiv.] *Dictionary of National Biography* entry on William George Ward

[dcclxxxv.] *Tract XC: On Certain Passages in the XXXIX Articles. By the Rev. J.H. Newman, B.D., 1841. With a Historical Preface, By the Rev. E.B. Pusey, D.D. (Revised). And Catholic Subscription to the XXIX Articles Considered in Reference to Tract XC By the Rev. John Keble, M.A., 1841* (London: Walter Smith and Innes, 1890), A2. There was interest in the Oxford movement around this time in America. Tract XC had been re-published in 1890.

[dcclxxxvi.] Daniel Sommer Robinson, 'Introduction' in *The Story of Scottish Philosophy,*D.S. Robinson ed. (New York: Exposition Press, 1961), pp. 15-20. Hereafter cited as *The Story of Scottish Philosophy*.

[dcclxxxvii.] See *The Works of Thomas Reid*, edited by Sir William Hamilton (Edinburgh: Maclachlan and Stewart, 1863) Vol II, *Essay on the Intellectual Powers of Man, 1785*.

[dcclxxxviii.] Villers, 240.

[dcclxxxix.] Shepherd (1827), 46.

[dccxc.] Blakey, 42.

[dccxci.] Blakey, 43.

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Articles on Mary Shepherd

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Errata (forthcoming)

Some of the more glaring textual errors will be appended here.

Notes for Revisions

Reid Stewart Brown et al -- contra Arist.

It is generally thought that Aquinas based his cosmological arguments on ideas taken from the ancient Greek philosopher Aristotle. Though the role of the Divinity in Aristotle's philosophy is quite different from the role of God in Christian thought, the main thing was that through Aristotle's argument, God's existence appears to have been established as a necessary final step in a chain of reasoning about change and motion.[dccxci] Thus, Aristotle supplied the original form of the 'First Mover' argument, an argument that predominated in Christian thought for many centuries, and that, to many, held the promise of a science compatible with theism. Indeed, the cosmological argument formed the mainstay of the schools of theology and philosophy that came to be known as 'Scholastic'. A combination of this old scholastic theology and Calvinist reform became the underpinning of the Presbyterian doctrine.

The philosophy of Aristotle was important as a precursor to these scholastic theologians, for Aristotle was considered to be an authority on the nature and method of reason. For, theologians such as Augustine and Aquinas were interested in attempting to prove God's existence primarily on the basis of reason, and the favourite philosopher among scholastic logicians, was, not surprisingly, Aristotle. Indeed, the methodology of the scholastics assumed a complete confidence in reason and logic, and like the metaphysics, it was largely borrowed from Aristotle. In short, the aim of scholastic theology was to elucidate religious truths, to explore their implications, and to examine their deductive relations to each other -- in short, to systematise them. One thing that a scholastic philosopher could not do -- i.e., which it was theologically impossible to do -- was to reject a revealed truth. Since revelation cannot be questioned, the resulting philosophy is not going to be very bold or controversial. In fact to deviate from orthodoxy had its penalties; nonetheless, the scholastic system of philosophy and theology was eventually subject to criticism. Although such criticisms seemed notoriously slow to reach Scotland, and even slower to gain acceptance, they did eventually come to the attention of the scholars there, presenting an intellectual challenge that would eventually require some form of response.

Move to Chapter Four -- Political Economy

As with all major social and economic reform, the land enclosure movement and the push towards industrialisation in Britain was complex. [Luddite unrest]

There were many and varied ways in which the losses and gains of the movement were counted. The wealthy maintained that there were fewer farms, but those that remained were run better and were more profitable. By the mid-nineteenth century, it was widely held that Scotland's reformed farm system had produced a superior agricultural system.[dccxci] Scottish farmers were seen as enterprising and well educated, and a good farmhouse in Scotland was said to give 'an idea of comfort, prosperity, and independence.'[dccxci] However, the transition from agrarian to industrial society exacted heavy tolls on many Scots, and those most closely connected with the displacement of tenants often saw things differently. Relocation to villages and towns brought great personal losses, but those who remained in Scotland's countryside fared perhaps worst of all. One recurring theme of late eighteenth century Dalmeny church sessions is the need to secure better financial assistance for the poor. The poor tax levied on

landowners in the area amounted no more than £15 per year; yet the landowners sometimes refused to pay their share in this tax.[dccxci] Given the nature of his work in the community, and his remarks on the rapid depopulation at Dalmeny, it is somewhat surprising to hear the optimistic tenor in Reverend Thomas Robertson's praises for the enterprising spirit of Scots and for recent advances in Scotland. He writes that a 'spirit for enterprise and for rising in the world, characterises the Scots in general' and that 'perhaps no people have in so short a period, made so great advances in industry, agriculture, manufactures, refinement, public revenue, and private wealth, as the people of Scotland.'[dccxci] Thus, even through the period transition, it was evident that the changes to agriculture and the growth of industry had already revitalised Scotland and urged it forward into the modern world.

By the late eighteenth century, Scotland was still struggling to develop a stable economy, but the outlook was, by and large, optimistic. Political economy was all the rage in intellectual circles throughout Britain. Scotland's own Adam Smith, and later, Thomas Malthus, were leaders in the field -- identifying the causes of economic growth, and suggesting strategies for improving both the economy and the well being of the citizenry. Following Hume, Smith interpreted current events and circumstances primarily by tracing histories, and as with Hume, the goal of the historical analysis is to identify the original causes of events, conditions, and institutions by linking them with past choices and actions. In his celebrated *Wealth of Nations,* first published in 1776, Smith argued that the economy is based on the division of labour and the mechanism of exchange. Indeed, 'all economic activity is the endurance of present pain in the hope of future pleasure to be got by consuming the fruits of one's labour or what is exchanged for them.'[dccxci] To ensure a healthy economy, Smith reasoned, neither division of labour nor the free operation of the market should be impeded. Smith acknowledged that his theory justified an unequal distribution of wealth, but firmly believed in a natural harmony of interests, maintaining that over time, there would be an overall increase of wealth and an evening of the distribution of wealth. A generation later, in 1798, Malthus would publish his *Essay on Population,* in which he argued that the rate of population growth could, potentially, far outstrip the means of subsistence. Mathus noted the relationship between family size and economic wealth, and showed that larger families were more likely to suffer from poverty. All things considered, better education of citizens and control of population growth would help to ensure improvement in economic and social conditions. Thus, Smith and Malthus, along with the Benthamites, initiated the tradition of classical economic theory.

In almost all of the political and economic theories of the seventeenth and eighteenth centuries, and especially in Malthus, education was advanced as central to the improvement of the economic and social circumstances of the average citizen.[dccxci] As such, education had come to be widely regarded in Britain as a distinct economic advantage. Despite the sluggishness of its economy, Scotland had an acquired an advantage over neighbouring countries in this respect. The advantage had arisen as a result of long-standing parish school system and newly revived colleges.

Move to Chapter Four: Berkeley's Development of Locke's empicism

However, the implications were drawn out by Locke's successors, one of whom was George Berkeley.

Berkeley's agrees with Locke that the objects of human knowledge are ideas. For Berkeley, our ideas are either actually imprinted on the senses, perceived by attending to the passions and operations of the mind, or formed by the help of memory and

imagination by compounding, dividing, or barely representing those originally perceived. Berkeley accepted much of Locke's theory of ideas, but added significant developments and modifications after exploring the relationship between ideas, the mind, and external existence in ways that Locke seems never to have imagined. For example, Locke's view was that the world involved, in addition to minds and ideas, material substances, the latter of which he held to be, apart from their primary qualities, unknowable. Berkeley wished to get rid of material substances on the grounds that they were entirely unknowable. Berkeley's arguments against Locke are directed against the tradition of abstraction ideas found in such thinkers as Galileo, and all subsequent defenders of primary qualities. Berkeley questioned the assumption that it is possible to apply an abstract analysis of primary qualities to material substance, and showed that this sort of empiricism leads to scepticism.[dccxci] To understand Berkeley's argument, we need to recall Locke's view that our minds make particular ideas become general by abstract reflection. According to Locke, abstraction is a function of mind that separates qualities or properties 'peculiar to each' particular representation and 'determines them to this or that particular existence'; and 'retains only what is common to them all.'[dccxci] The resulting general idea is an abstract idea, that is, a new idea that arises, possessing universality and generality. Thus, 'the general idea of triangle ... must be neither oblique nor rectangle, neither equilateral, equicrural, nor scalenon, but all and none of these at once.'[dccxci] This Lockean view, Berkeley thinks, is contradictory to experience. Our common knowledge is that sensible qualities of things never exist separately from each other, but rather, are blended together in the same object. For Berkeley, if colour and motion cannot exist without extension, then the mind cannot frame the abstract idea of extension without colour. If this is so, then it must be wrong to claim that the mind is able to observe common characteristics of particular distinct qualities and then frame 'a most abstract idea' by leaving out particular sensations. Berkeley objects that we cannot form abstract idea of quality, such as the idea of a colour that is neither red, nor blue, nor white, nor any other determinate colour, exclusive of 'those other qualities with which it is united'. This, he says, is contradictory to the common knowledge that all things that exist are compound beings that contain particular qualities. Berkeley insists that when he makes up a compound being in his imagination, it is always imagined along with particular ideas -- particular ideas of eyes, hands, shape, colour, and so on. As Berkeley writes 'But I deny that I can abstract from one another, or conceive separately, those qualities which it is impossible should exist so separated'. Since ideas, as objects of the mind, are particulars, it is absurd to say that the mind frames abstract ideas, e.g. the idea of extension without magnitude or figure, by leaving out particulars.[dccxci] In sum, Berkeley's main argument against Locke is that abstract ideas are inconceivable, and therefore, impossible. Berkeley challenges the reader to try to conceive the abstract idea of a triangle as Locke described it, but doubts that it will be possible to accomplish the task.

Berkeley's rejection of Locke's general and abstract ideas forms the basis for his rejection of the existence of unthinking material things. Berkeley is convinced of the truth of the claim that 'it is impossible for me to conceive in my thoughts any sensible thing or object distinct from the sensation or perception of it'. For this reason, he reasons that Locke is mistaken in inferring that a material substratum exists from the fact that the qualities he senses cannot be conceived to exist without some supporting substratum. For 'anyone who claims that objects can exist apart from being conceived is making a claim that they themselves cannot even conceive of.' If we know 'material objects' only by the qualities which we perceive in them, then materialists like Locke can have no conception of what the material substratum is, or of how it is related to secondary qualities like temperature, smells, or colour. What does Berkeley have to say about 'the absolute existence of unthinking things without any relation to their being perceived'? Berkeley says that this

seems perfectly unintelligible, and that *esse* is *percipi* -- to be is to be perceived. Berkeley's thus rejects the existence of any sort of mind-independent object. He argues as follows: Things perceived by the senses are nothing but our own ideas or sensations and that ideas and sensations could not exist unperceived. It follows from this that no sensible object could have an existence distinct from their being perceived by the understanding.

Move to Chapter Three: Aristotelian Empiricism

Work in to elucidate Kerr's perspective

Advances made by scholars like Copernicus, Galielo, Kepler, and Bacon had changed attitudes toward natural investigations and raised serious doubts about the tenability of Aristotelian physics. In physics, Aristotle held that scientific reasoning involves arranging sets of statements into deductive argument patterns, and so was based on the combination of logical principles and specific theorems.[dccxci] According to Aristotle, science involves using empirical data, generalisations about data, and arguments. As a general picture of scientific activity, this view is adequate, and has much to recommend it. However, Aristotle had a very limited grasp of how to make empirical generalisations from data and of what makes propositions true, or 'self-evident', according to Aristotle, so his empirical investigations were of limited value.[dccxci]
By the time of Galileo and Bacon, it was already widely held among scientific community that Aristotle's analysis of natural and violent motion did not accord well with the results of empirical analysis. Galileo made it his business to challenge the authority of Aristotle in his writings. As part of his criticism, Galileo initiated new arguments and analysis in physics, theology, and philosophy. His application of abstraction, idealisation and mathematical analysis in reasoning about phenomena was new, and through this method, he furthered the understanding of the role of experiment in science.[dccxci] Thus, Galileo's physics, which aimed for a new interpretation of physics based on the used of mathematical analysis, abstraction, and idealisation, led to the discrediting of Arisotelian physics. In his investigation of accelerated motion, the mention of attraction to the centre and of the cause of accelerated motion is close to the idea of gravitational attraction that would form the basis of Newton's theory of terrestrial and celestial mechanics. Galileo introduces the concept of a uniformly accelerated motion, which is a motion that, theoretically, from a resting point, gains momentum in equal increments in equal times. There are no such uniformly accelerated motions in physical reality, and the concept is an idealisation. Uniformly accelerated motions, along with other such idealisations, play an important role in Galileo's scientific reasoning, although Galileo recognised the fact that such idealisations do not correspond to anything in visible phenomena. For Aristotle, such idealisations would be entirely unacceptable in physics. However, in Galileo's reasoning, they are assumed for the sake of argument, because they serve the epistemic purpose of advancing our understanding of natural phenomena in theories and proofs.

Thus, it was through such innovative strategies such as idealisation and mathematical analysis, as well as through the careful assessment of the empirical facts, that Galileo was able to advance scientific methodology beyond Aristotle. He used a telescope to observe the planetary motions and to make crucial observations of the planetary system, including observations of the phases of Venus, which he used to help establish the truth of the Copernican system. Indeed, it may have been his sense of the importance of both empirical and abstract analysis that led Galileo to define the concept of primary qualities. Galileo mentions primary qualities such as size and shape and secondary qualities such as sweet and red in *The Assayer*, a distinction that would become important in early modern philosophy, which was greatly influenced by the new science.[dccxci] A primary

quality is a property that any body must necessarily be conceived of as possessing. Primary qualities are those which can be handled in the sciences of number and space, i.e., they can be handled quite naturally by arithmetic and geometry. A secondary quality is a property which common sense dictates that we attribute to objects. These qualities are what our senses make of the motions of real bodies. According to Galileo, only mathematically described qualities can be ascribed material reality. If a property cannot be treated mathematically, then it is merely subjective, and by the law of non-contradiction, which tells us that something cannot both have and lack a property at the same time. It is a secondary quality.

Although Aristotle's approach to the study of philosophy was still highly regarded in the seventeenth and eighteenth centuries, it was also clear that advances in physics and astronomy had been achieved mainly as a result of a shift away from Aristotelian assumptions. Aristotle had been the first of the ancient philosophers to emphasise empiricism in science, and it is probably due to his success that physics was so long studied in a non-mathematical manner. In the rival Platonic tradition, one must begin with the physical, but the point of learning is to get beyond the physical trappings of things to the formal, abstract and real aspect of things. This tradition emphasised pure mathematics, geometry and all things abstract, but not their application to physical things. Aristotle had sought to carve a special niche for empirical science, a niche that was not recognised in his day as a separate area of study. In doing so, he approached the study of nature and causality in a new way -- for his day. Aristotle's empiricism advocated a form of applied science in which the physical and the formal elements of things are part of one whole whose elements are only separable in thought. This kind of thinking paved the way for empirical science, by suggesting that close observation of physical things was a clue to their formal reality. But, since Aristotelian natural philosophy failed to recognise the importance of the application of mathematics in the analysis of physical things, it slowed the progress of science.[dccxci] In the end, Aristotelian physics was inadequate to explain the types of motion going on in the universe. Instead, a new science developed, a Galilean mathematical physics aimed at deriving the laws of terrestrial motion, like that of freely falling bodies and motion on an inclined plane, as well as a Copernican system of planetary motions.

While observation had played a role in both the new early modern science and the old Greek and Aristotelian physical thought, a major difference lay in the emphasis on a systematic inductive method and exact observation. In the early modern period, with the developments in science, mathematical analysis, and technology, there were enhanced possibilities for observation and experiment. The quest for precision was a major factor in the application of mathematics to physical problems. The new science sought measurable quantities characteristic of observable events. Just as it is impossible to understand medieval philosophy apart from Christianity and the Bible, so modern philosophy is incomprehensible unless seen in relation to the growth of science and the reaction of early modern thinkers to Aristotelian science and methodology. England's Francis Bacon, who emphasised the need for correct methods of collecting and analysing data, was an undisputed leader in this respect, and his work on the method of induction helped to propel science onward from its scholastic stagnation. Indeed, following Aristotle, the standard teaching on inductive method and the role of observation in science had become Francis Bacon's *Novum organum.* In Bacon's view, the first step towards scientific progress required that the field be completely cleared from traditional prejudices and errors. In his *Novum organon* -- the 'old Organon' being Aristotle's works on logic and scientific inference -- Bacon classified prejudices under the metaphor of four kinds of Idols, choosing this word, no doubt, because of its double significance of mere image without substance and of unworthy object of worship.[dccxci] The Idols of the Tribe

are prejudicial modes of thinking common to humanity as such. The tendency to wishful thinking is the principal one. We overvalue what agrees with our preconceptions and overlook negative instances. The Idols of the cave are related to individual preferences and biases. Some people like to think about things analytically, some people like to think about them organically. The Idols of the Market Place are the infirmities of language: 'the ill and unfit use of language wonderfully obstructs the understanding'. Bacon is not deploring deficiencies in individual vocabulary, but the defects of language itself, which he thinks has words it should not have such as 'fortune' and 'Prime Mover', which signify nothing that exists; and vague, ambiguous words such as humid, earth, generate, corrupt, alter, heavy, light, rare, and dense. 'Lastly, there are Idols which have immigrated into men's minds from the various dogmas of philosophies, and also from wrong laws of demonstration' These are the Idols of the Theatre. These are the systems of philosophy -- Aristotelianism, Scholasticism, and the like -- which Bacon considers just so many stage plays. In their grip, we fail to notice what the world is like because we are persuaded that we already know what it must be like. Once we have expelled the Idols from our minds, Bacon tells us that, as natural scientists, we are to perform systematic observations and experiments aiming at the discovery of the simple nature of a thing. This discovery is to be achieved through the use of induction. We find the cause of a phenomenon by gathering instances together, and attempting to control for irrelevant factors. What is distilled through this process is supposed to be the 'principle' of the phenomenon or the axioms of a science.[dccxci]

Following the promotion of inductive methods in thinkers such as Bacon, Aristotle's categorical syllogisms no longer seemed a complete methodological basis for science. But it was nonetheless felt that Aristotle did in fact have many things right, and Aristotle's philosophy continued to influence natural philosophers for many centuries after the discoveries of Copernicus, Galileo, Kepler, and Bacon. In the seventeenth century, Newton's physics represented yet another major advance in favour of the new physics. And, though the significance of Newtonian physics was not fully understood, it was obvious to the scientific community that Newtonian mechanics had brought together an amazing array of elements into a single unified explanation of terrestrial and celestial phenomena. Newton's *Principia* combined Kepler's laws of planetary motions, Galileo's law of the free fall of bodies into a single inverse square law of gravitational attraction. He drew on empirical data, the technique of idealisation piloted by Galileo, the Copernican solar system and his own new method for calculation tiny incremental motions as mathematical idealisations and laws of relative motion. Despite all of these impressive and revolutionary advances, the appeal of Greek thought was quite general with the scholastics, and Aristotle had a distinct advantage in one respect. For not only did his natural philosophy appear to be the most forward thinking of ancient doctrines, but he proposed a basis for proof of a divine creator. In sum, despite criticisms of thinkers such as Bacon and Galileo, scholastic philosophy and Aristotelian precepts were popular in educational institutions for many years. They were philosophically and theologically safe, and in fact, still formed the basis for much of Edinburgh's higher education curriculum in the eighteenth century. Indeed, through scholasticism, Presbyterianism and its dogma were reinforced, not only in relation to theology, but also in the domains of science and philosophy. In fact, Aristotle's influence on the history of philosophy was so enormous, that in the early eighteenth century, Edinburgh's curriculum essentially devoted two years of study to Aristotle -- which is in itself a testimony to his significance. Thus scholasticism remained the favoured approach to philosophy and theology and served the conservative theology of Presbyterianism, lasting for centuries, until criticisms led to crippling doubts about the possibility of giving sound proofs in support of many of its central tenets.

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Move to Chapter ?: transubstantiation

Hume's doubts about causality, for example, had stemmed from empiricist and speculative analyses, and ultimately led to questions about God's existence. And, with the rise of such empiricist analyses went the decline of scholastic philosophy, a decline that, as Hume had shown, gave rise to a broad range of questions relating to causality, God, miracles, the sacraments, and more. As the concern of Presbyterian Ministers of Edinburgh shows, Hume's critique was seen to pose a significant threat to Presbyterian religious conservatives. Yet, Hume's analysis bode ill for Scottish Episcopalians as well. For, given an empiricist analysis, transubstantiation, which literally requires that Christ enter the bread and wine during Communion, could not be explained; for, there could be no mundane explanation of ordinary wine and bread producing the effect of the Eucharistic Presence. As such, the empiricist analysis threatened the orthodox Episcopalian interpretation of the Eucharist. Scholastic philosophy, however, had supported the view that God's agency is at work in the world, offering an alternative in which God is conceived of as the causal agent in the Eucharistic mystery. However, as Dugald Stewart had argued, this view demands an explanation of the nature of God's Presence in the material world, and may lead to the 'dangerous' theology of Spinoza.

God and the King

Reform on the side of tradition, how to deal with challenges presented by philosophy, challenges presented by social and political change

Hume and Leslie affairs

Shepherd is clearly responding to the Leslie affair, but also implicated in later 19th century issues and thought

Shepherd sees herself as an original - not merely as carrying out the research projects of others thinkers, e.g., Locke

Hume - from universal to mitigated scepticism and a lot of politics along the way

Hume and Priestly

Miracles, jesus as a man, disappointment in imperfect nature (following upon scepticism of empiricists)

Locke as hero of glorious revolution, but implicated in American and French revolutions confusing times re: tradition and philosophy

Brown and Shepherd vs. Reid and Stewart

Reid and Stewart on metaphysical and physical causation

Need necessity and a non-Humean (e.g., Thomas Brown or Mary Shepherd) faculty psychology to reply to Hume

Mill and Ricardo, Babbage, de Stael, London

Systematic philosophy, Geology, Math, German influence, Kant, Fr Rev

Lawrence and Fearn

against Materialism, which she sees as a fallout from sceptical empiricism

vision, mind, representation, camera obscura

Brown and Lawrence on physiology

Whatley, Channing?

Final causes

letter to Reverend Channing NLS

Coleridge, Wordsworth and British Romanticism

There is a thread, I think, an influence that relates to the romantic revival; a desire to find beauty in nature (that has been stripped of its glory by empiricism and skepticism).

The same inspiration and motivation in American Transcendentalism.

It's there in spirit in MS, I think. As an influence on her standpoint. Or she an influence on theirs.

Kant's Transcendentalism

Yes to Copernican revolution insight, that our ideas (a priori ideas and, for Kant, intuitions supplied by the faculties) shape experience rather than experience shaping all of our ideas

Yes to existence of a transcendent noumenal reality that we cannot 'know' in the same way that we know the appearances, but only 'know of'

More of a Kantian tenor in her reply than anyone before her; perhaps influences others, e.g., Carlyle, Campbell and others

Links between Kant, British Romanticism and American Transcendentalism

Dispenses with everything but an a priori necessity for the causal relation and the main gist of the transcendentalist argument to show how empiricism and science are possible

Perhaps, like the British Romantics and American transcendentalists insofar as she is mainly inspired by the broad conclusions espoused by Kant in his reply to Hume

Inspired by and defender of rationalist tenets that put mind, consciousness, god, beauty and perfection of nature forward

Espouses ideas as having important role in our knowledge of reality; not just empirical world of senses, we need a priori as foundation for empiricism and science

Systematic Philosophy and Philosophy of Theism (1857)

Philosophy of Theism (1857) This book reads like a summary of a MS system. I have a strong feeling that it is her work or that it is based on her work.

Was the very same version submitted to the New Edinburgh Philosophical Journal (Vol VII 1858)? How is James Croll connected? Given his biographical details, Croll seems an unlikely author for a work such as this. I am doubtful of the attribution. See Irons biographical piece and follow up on the plagiarism and failed exams stories. Could there have been a connection between Croll and MS (or her work).

One reference that is out of place for an MS authorship (because of the date) is Calderwood's Philosophy of the Infinite (1854). But Calderwood won a Hamilton prize in 1847 for his work on Infinity (Sir William Hamilton, University of Edinburgh). Could MS have reviewed an early version, heard about the essay or met Calderwood in a social setting?