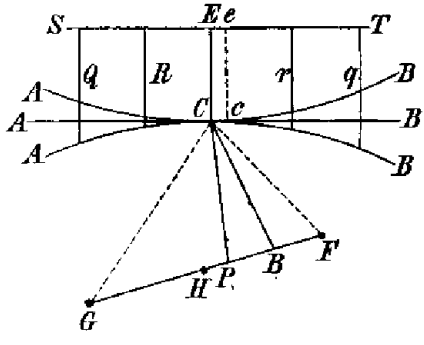
Markku Roinila

Leibniz on Rational Decision-Making



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Abstract

In this study I discuss G. W. Leibniz's (1646-1716) views on rational decision-making from the standpoint of both God and man. The Divine decision takes place within creation, as God freely chooses the best from an infinite number of possible worlds. While God's choice is based on absolutely certain knowledge, human decisions on practical matters are mostly based on uncertain knowledge. However, in many respects they could be regarded as analogous in more complicated situations.

In addition to giving an overview of the divine decision-making and discussing critically the criteria God favours in his choice, I provide an account of Leibniz's views on human deliberation, which includes some new ideas. One of these concerns is the importance of estimating probabilities – in making decisions one estimates both the goodness of the act itself and its consequences as far as the desired good is concerned. Another idea is related to the plurality of goods in complicated decisions and the competition this may provoke. Thirdly, heuristic models are used to sketch situations under deliberation in order to help in making the decision.

Combining the views of Marcelo Dascal, Jaakko Hintikka and Simo Knuuttila, I argue that Leibniz applied two kinds of models of rational decision-making to practical controversies, often without explicating the details. The more simple, traditional pair of scales model is best suited to cases in which one has to decide for or against some option, or to distribute goods among parties and strive for a compromise. What may be of more help in more complicated deliberations is the novel vectorial model, which is an instance of the general mathematical doctrine of the calculus of variations. To illustrate this distinction, I discuss some cases in which he apparently applied these

models in different kinds of situation. These examples support the view that the models had a systematic value in his theory of practical rationality.

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Siltavuorenpenger, Helsinki, March 2007

Markku Roinila

Introduction

Perhaps the most well known feature of Gottfried Wilhelm Leibniz's (1646-1716) philosophy is his doctrine of God's choosing to create this world among an infinite number of all possible worlds. Whereas the criteria employed by God in His rational choice, and whether or not He was free in it have been discussed extensively, human choice or deliberation has received less attention. Yet Leibniz discussed ethical issues and the good life in numerous memoirs and letters, and the theme is also present in all of his larger works. Because these discussions are scattered and fragmentary, the general insight into his view of human deliberation has remained hazy.

The aim of this study is to give an overview of Leibniz's views on human deliberation and to examine his methods of deciding rationally in practical matters. In addition, an account is given of the rational choice of God and the criteria He employed. I will argue that Leibniz considered rational choice in God and men largely analogous despite some serious differences.

For Leibniz it was of utmost importance that men acted rationally. This was an essential feature of the best possible world. Although God could, through his infinite understanding, analyse the whole history of the world and its inhabitants, men were unable to do this. Their only means of obtaining knowledge of the intentions of their creator, apart from through theology, was to study nature and to develop science.

Leibniz's goal in his moral philosophy was to persuade men to follow God's intentions. Since this is the best of all possible worlds, God had His reasons for creating it as it is, and His intentions can be observed in nature. When we study nature, we gain pleasure from observing His perfections in it, which makes us love Him. This love creates in us a pleasure of the mind, which motivates us to act in a manner that pleases Him. In other words, acting according to the intentions of God gives us joy and appeals to our reason.

When our moral action follows reason, we act according to God's wishes, whether or not we succeed in contributing to the general progress of increasing perfection. Experiencing an increase in perfection brings about a pleasant sentiment in the moral agent, and consistently acting virtuously, in other words acting in a manner that pleases God, brings about supreme happiness. Since morally acceptable action is also rational action, general well-being depends on it. To act morally in the Leibnizian sense is to perfect oneself, to practise charity, and to try to increase one's knowledge of nature and its creator.

In his quest to promote universal perfection and a world of peace and harmony Leibniz was active in many practical fields, including politics, diplomacy, economics, the politics of science and church reunification. It was essential for him to develop different ways of settling the practical problems that endangered this great goal. He was always ready to find something good in each opinion, and to find a common ground for different viewpoints. For example, he tried to reconcile the ancient and the modern in his philosophy.

Leibniz thought that if all the propositions related to a controversy could be analysed into their most simple elements, one could simply calculate the right answer. If this analysis were performed successfully, the differences between opposing parties would simply vanish. In most practical cases, however, one cannot do this because complete analysis is not possible. Leibniz's answer to the problem was to try to develop a calculus of probabilities that could give us probable information about the relations of propositions. This probability calculus turned out to be a far more difficult task than Leibniz first imagined, which is why he had to develop other, “softer” methods to act as a basis for rational decision-making in the uncertain situations that are typical of human practical rationality.

In his article “The Balance of Reason” Marcelo Dascal argues that, according to Leibniz, in human controversies different reasons are balanced against each other as on a pair of scales. In this weighing it is not necessary to reach demonstrative certainty – one need only to judge whether the reasons weigh more on behalf of one or the other option.

A different model of human decision-making is discussed by Jaakko Hintikka in his article "Was Leibniz's Deity an *Akrates*?" Drawing his inspiration from Nicholas Rescher's interpretation of God's criteria for the best of all possible worlds (commonly known as the trade-off-theory), he argues that Leibniz developed a new general model for rational decisions that helps in making complicated decisions. This model, which was related closely to his work on the philosophy of nature and mathematics, is a heuristic device that helps in finding a rational combination – and in an ideal case an optimum – of plural separate inclinations to the good. Hintikka's idea is developed further by Simo Knuuttila in his article "Old and New in Leibniz's view of Rational Decision", in which he calls it the vectorial model of rational decision.

I will argue that Leibniz applied both the pair of scales model and the vectorial model in his views on human practical action. He applied the former, in which different options are weighed against each other, in simple for-or-against situations or in cases in which one can strive at a compromise by distributing goods equally among parties, and the latter in more complicated situations in which they are independent and competing against each other.

My specific interest is directed to the vectorial model for two reasons. First, it is relatively unknown although it seems to have been a systematic method of evaluating goods in Leibniz's practical rationality. Secondly, it is an instance of a larger mathematical doctrine of the calculus of variations, which, as I will argue following the lines of Nicholas Rescher and some other commentators, is also God's preferred way of conceiving of the structure of the best of all possible worlds. I will elaborate on the model in the light of Leibniz's different writings, and attempt to trace instances of its application in his practical writings in order to find support for the claim that it had systematic value in his views of practical rationality. As far as I know, this task has not been accomplished so far.

The study is divided into three parts. The first Part is devoted to the divine choice of the best of all possible worlds. I will begin by discussing the choice in general, and God's freedom in His choice. Chapter two concerns God's plan to create the best of all possible worlds. I will compare the interpretations offered by

Nicholas Rescher, David Blumenfeld and Donald Rutherford of the criteria God employed in His choice, and will defend Rescher's interpretation. Lastly, I will discuss Leibniz's defence of God's goodness or the so-called problem of theodicy.

In Part two I turn to the essentials of human decision-making, in other words cognition, reasoning and the theory of probability. In Chapter four I consider Leibniz's basic principles of reasoning and the innate ideas to which they were related. I then move on to his views of cognition and look at his notions of perception and especially apperception, which strongly influenced his views on rational moral action. The next Chapter presents his views on reasoning about contingent truths, which, as I argue, is far more demanding than reasoning about necessary truths. The rest of Part II concerns the question of probability. Estimating probability in contingent matters is a crucial element in Leibniz's practical rationality, and for this reason I will dwell on his views on its calculation and assessment. I include some case studies illustrating how these efforts at dealing with probabilities are applied in practical matters.

The third and the largest part of the study comprises a systematic discussion of Leibniz's views on the goals of human rational action and deliberation, and of his models of rational decision-making. Chapters eight and nine concern the goal of ethics and the practical rationality in human action. I consider the essential elements of Leibniz's moral philosophy, such as his views on love, goodness, justice and virtue. I proceed in Chapter ten to discuss deliberation. First I look at Leibniz's influences and then discuss his views on deliberation in general. Then I turn to his views on the soul and the role of the intellect and the will, which leads to a discussion of the passions of the soul and of Leibniz's views on the weakness of the will.

Chapter eleven presents Leibniz's two models of rational decision-making and considers some related case studies. I will show that the two models are applicable in different kinds of cases and that they had a systematic value in his views on practical rationality. There is a number of examples to be found in Leibniz's practical writings in which he applied the models, often without

spelling out the details. I will discuss these examples and show how the models are applied in them.

As the above suggests, I will limit myself to discussing Leibniz's views on divine choice and practical rationality. Consequently, I do not mention - or then only in passing - many of the main subjects he covered in his philosophy, such as the nature of substance or dynamics. These matters, of course, have a bearing on practical rationality, but so does almost everything in his philosophical thinking. I have tried to keep my discussion concise, and this is why I have had to leave many issues untouched.

My approach in this study could be said to represent the context-oriented or exegetical rather than the philosophical method of the history of philosophy, as distinguished by Robert Sleigh.[1] I will discuss Leibniz's views on rational decision-making from his standpoint, not that of modern philosophy. Following Donald Rutherford's account about his own project in his *Leibniz and the Rational Order of Nature*, I aim to construct a systematic interpretation of Leibniz's views on rational decision-making, which "takes an author on his own terms and seeks to reconstruct a version of his doctrines that would be recognizable to the author himself."[2] At the same time, while bringing out the innovations in his thought, I will not attempt to hide the numerous shortcomings in the texts that make the interpretation difficult.

Parting company from many recent studies on Leibniz, I do not maintain strict chronological order. I will discuss the views he held at different time periods, and use examples from both his early and his later career, although his most extensive discussions concerning decision-making are in his late works such as *Nouveaux essais* and *Essais de Theodicée*. My main reason for taking this approach is that I think Leibniz's views on practical rationality did not change substantially after the 1670's. Another reason is the nature of my project. Since the material is so scattered and sometimes hard to find, I have had to use what was available, although keeping in mind the contexts of various views.

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[1] On the distinction between exegetical and philosophical history, see Sleigh, *Leibniz and Arnauld*, pp. 2-6.

[2] Rutherford, *Leibniz and the Rational Order of Nature*, p. 3.

The aim of this study is thus to collect together and spell out Leibniz's views on practical rationality, which are often dispersed in various discussions of practical matters or in polemics against other scholars. I will also bring out the novelty of some of Leibniz's ideas, such as the pluralism of values in practical decisions and the importance of estimating probabilities in rational decision-making. I will also show the distinction between two different kinds of decision models (combining two previous interpretations), and discuss some case studies to support my claim that these models had a systematic value for Leibniz.

To complement this original contribution, I give a general account of Leibniz's views of human deliberation, which has no single predecessor, as far as I know, in the history of Leibniz studies. I also offer a critical account of the different interpretations concerning the divine "plan" of creating the best world and the question of apperception. Given the huge scale of the topic and the lack of extensive discussion of Leibniz's practical thought, my aim is rather to provide a general account of his views on rational decision-making than to make a detailed examination of specific arguments or different interpretations of this aspect of his thinking.

As noted at the beginning of this introduction, there are surprisingly few commentaries on Leibniz's theory of practical rationality, and only a few studies dealing exclusively with his moral philosophy. The most extensive of his views on jurisprudence and ethics are Gaston Grua's two works, of which *La Justice humaine selon Leibniz* (1956) is more important as far as my study goes. Another influential study of Leibniz's ethics is Albert Heinekamp's *Das Problem des Guten bei Leibniz* (1969).

The one general work on Leibniz's ethics, written in English is John Hostler's *Leibniz's Moral Philosophy* (1975), which has many shortcomings. A recent systematic presentation of the importance of God's rational choice of the best of possible worlds and the ethical implications of this choice is Donald Rutherford's *Leibniz and the Rational Order of Nature* (1995). I also found a recent collection of articles, edited by Donald Rutherford and J. A. Cover, called *Leibniz. Nature and Freedom* (2005) helpful.

Although all of these works influenced my study, my account of Leibniz's models of decision does not owe a great deal to them. The most relevant sources, apart from the articles by Dascal, Hintikka and Knuuttila mentioned above and Leibniz's own writings, were Louis Couturat's *La Logique de Leibniz* (1901), Jon Elster's *Leibniz et la formation de l'esprit capitaliste* (1975), and Marc Parmentier's 1993 article "Concepts juridiques et probabilistes chez Leibniz." I have also profited from numerous other articles dealing with Leibniz's practical projects.

To end this introduction, a few words on the texts and the translations are in order. I have used the official Academy edition of Leibniz's texts (marked A) whenever possible, but since this is nowhere near its completion, I have also used many other editions. Of these, the Gerhardt edition (marked G) is the most important. I have added a list of abbreviations for these different editions at the end of the study.

I have also used English translations whenever possible. However, in many cases (especially *Nouveaux essais*) I have changed the translations in order to give an accurate a picture as possible, and have not marked the alterations. The original text is given in the notes. I have often included citations in the notes only, and in these cases the text is in the original language. I have chosen to keep the original texts exactly the same as in the editions (with the exception of that in italics), although especially the Gerhardt edition includes numerous misspellings and mistakes in the French language.

Part I

Divine Choice

1. God's Rational Choice

The ultimate rational decision in Leibniz's philosophy was God's choice of the best of all possible worlds.[3] God is seen both as a necessary being and as the author of the world in the sense that He creates the world He finds to be the best of all possible worlds. He creates the world and in principle terminates it – the world cannot come into existence and cease to exist in any other way.[4]

In creation God realises an infinite number of compossible substances that have a disposition to exist. Before creation, all substances reside only as ideas in the understanding of God.[5] All possibilities (truths of fact) are true in some possible worlds, but

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[3] On the history of simultaneous alternative possibilities and alternative possible worlds in medieval philosophy, see Kukkonen, *Possible Worlds in the Tahâfut al-Falâsifa: Al-Ghazâlî on Creation and Contingency* and Knuuttila, *Duns Scotus and the Foundations of Logical Modalities*. On the concept of "possible world" before Leibniz, see Knebel, *Leibniz, Middle Knowledge, and the Intricacies of World Design.*

[4] *La Monadologie,* §6.

[5] In a memoir *De rerum originatione radicali* Leibniz stated that all possibles or essences have an exigency to exist, or a "pretension" to existence according to their quantity of essence or reality, or according to the degree of perfection they contain (G VII, p. 290 & 303). This doctrine is curious, because it seems to imply that God is not required to make any choice between possibilities. I tend to agree with Nicholas Rescher and David Blumenfeld, who hold that the doctrine should be taken only figuratively, as a metaphorical description of different degrees of perfection in substances. On this topic, see Rescher, *Leibniz: An Introduction to his Philosophy*, pp. 33-34 and Blumenfeld, *Leibniz's Theory of the Striving Possibles*. For a critique of this view, see Shields, *Leibniz's Doctrine of the Striving Possibles*.

necessary truths or truths of reason (I will return to this distinction in Chapter 4.1.) are true in all of them. Each substance follows its individual developmental programme (the individual notion), which only God can foresee.

The reason for the claim that there exists only one single best world is to be found in Leibniz's opposition to the liberty of indifference. Choice in a state of equilibrium (two or more equally worthy objects of choice) entails the liberty of indifference, and it cannot be allowed because there has to be some difference or advantage that the best world has and others do not. In His wisdom God finds this best alternative, which gives Him sufficient reason for His choice. Liberty of indifference implies acting without reason, because there is no sufficient reason why one is to be preferred to the other. In his third letter to Clarke Leibniz wrote:

> "…this is plainly maintaining that God wills something without any sufficient reason for His will, against the axiom or the general rule of whatever happens. This is falling back into the loose indifference I have confuted at large and showed to be absolutely chimerical even in creatures and contrary to the wisdom of God, as if He could operate without acting by reason."[6]

Immanuel Kant considered some arguments against this doctrine in his essay *Versuch einiger Betrachtungen über den Optimismus* (1759).[7] According to him, there has to be a possible world beyond which there is no better. From this it does not follow that there has to be one single ultimately perfect possible world, since if two or more possible worlds were equally perfect, neither would be the best for they both would have the same degree of goodness.[8] Kant

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[6] "…c'est justement soutenir que Dieu veut quelque chose, sans qu'il y ait aucune raison suffisante de sa volonté contre l'Axiome, ou la regle generale de tout ce qui arrive. C'est retomber dans l'indifference vague, que j'ay amplement refutée et que j'ay montrée chimerique absolument, même dans les creatures, et contraire à la sagesse de Dieu, comme s'il pouvoit operer sans agir par raison." G VII, p. 365; L, p. 683. See also G VII, p. 301 and the 2nd letter to Clarke, G VII, p. 356.

[7] Kant's essay was brought to my attention by Professor Olli Koistinen.

[8] Kant, *Theoretical Philosophy*, 1755-70, p. 72. This is discussed by David Blumenfeld in his article *Is the Best Possible World Possible*?, in which he

strove to defend Leibniz's doctrine by assuming that the absolute perfection of a thing was to be equated with its degree of reality.[9] According to him, two realities cannot be distinguished from each other as such – one could only argue that something is present in the one and not in the other. Thus realities differ from each other only with respect to magnitude and not with respect to quality. From this he concluded that two different worlds could never have the same degree of reality and therefore there could not be two worlds that were equally good and equally perfect. Thus there is only one perfect world.[10]

Later Kant offered an alternative solution, which was to regard this world as the best because God had judged it to be thus. Because God's judgement never errs, it follows that this world is, in fact, the best.[11] Since God is perfectly good and omniscient, it seems natural that He chose to create the best of possible worlds.[12] I will return to the alternative interpretations of the criteria God employed in His choice in Chapter 2.

There are additional problems, which Leibniz more or less ignored or that remain ambiguous in his writings. One is this: why did God choose to create a world at all? God is, of course, a self-sufficient entity without any external duties. He did not need to create the world in order to be more perfect, since He was already the most perfect possible being. He also had no obligation to

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argues that Leibniz could not explain consistently why God should realise some possible world at all. See also Reichenbach, *Must God Create the Best Possible World*?

[9] In fact, the argument that the degree of reality is equated with absolute perfection is taken from Crucius. Kant, *Theoretical Philosophy*, 1755-70, p. 72, n. 6.

[10] Ibid., pp. 72-73.

[11] Ibid., p. 75.

[12] This feature of Leibniz's metaphysics is not traditional - Augustine thought that God created what He thought was a good world. He created for six days and then He rested. The result was a good, but not necessarily the best world. Time was created with the world, so this story is only metaphorical. Knuuttila, *Time and Creation in Augustine*, p. 103. On the Judeo-Christian tradition, see also Adams, *Must God Create The Best?* and Knebel, *Necessitas Moralis Ad Optimum*.

anyone to create a world.[13] However, one would assume that He would be more perfect if He created at least some world, for being in itself is traditionally thought to be good.[14]

The creation took place by God's will. Leibniz argued in *Essais de Theodicée* (1710), §233 that God resolved to create the world through the free motion of His goodness.[15] In His deliberation amongst all possible worlds the good in the best possible world persuaded Him to create it. His will was directed to the goodness of that world and this inclined Him to choose it from among an infinity of possible worlds, but it did not necessitate His choice.

However, if the objective good dictates God's decisions, how can He choose otherwise? If He cannot, His will is not free. This, again, would mean that there was no real contingency in the actual world. There is no doubt that Leibniz wished to avoid this kind of necessitarianism concerning God's choice, since he stated this on numerous connections, usually in the context of his criticism of Spinoza. For example, in *Essais de Theodicée*, §173 he wrote:

> "Spinoza went further: he appears to have explicitly taught a blind necessity, having denied to the Author of Things understanding and will, and assuming that good and perfection relate to us only, and not to Him...he teaches that all things exist through the necessity of the

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[13] On this question I agree with Robert Merrihew Adams, who argues that God has no obligations to the created, because they exist only as possibles in His mind and not as actual moral beings. See Adams, Must God Create the Best?, p. 319.

[14] On this theme, see Scott MacDonald (ed.) *Being and Goodness*. David Blumenfeld has argued convincingly (referring to *Essais de Theodicée*, §8) that Leibniz's subscription to the principle of perfection as God's criteria for His choice led him to hold (against his own argument) that creating nothing was a worse alternative for God than creating less than the best of all possible worlds, since being is better than non-being. Even if there were no best among the possible worlds (or even several equally perfect worlds), it would have been better, but not necessary, for God to create something (that is, a world with some degree of perfection) rather than nothing. Blumenfeld, *Is the Best Possible World Possible*?, p. 170.

[15] Here Leibniz agreed with Bayle. See G VI, p. 256.

> Divine nature, without any act of choice by God. We will not waste time here in refuting an opinion so bad, and indeed so inexplicable."[16]

It is quite another question whether Leibniz could have avoided the problem. This has given rise to an extensive discussion of his view of contingency and necessity, of which I cannot give a detailed account here. I will only briefly refer to the most well-known interpretation of God's freedom given by Robert M. Adams in his article "Leibniz's Theories of Contingency". Adams argues that Leibniz was both a compatibilist (subscribing to the view that one is able to choose freely despite determinism) and a determinist (everything in the world is hypothetically necessary), but tried to present his views in a non-offensive way in order to escape the severe criticism that Spinoza received.[17] Adams cites the following passage from Leibniz's letter to Wedderkopf from 1671 as an indication of his early views:

> "Since God is the most perfect mind, however, it is impossible for Him not to be affected by the most perfect harmony, and thus to be necessitated to the best [optimum] by the very ideality of things...Hence it follows that whatever has happened, is happening, or will happen is best and therefore necessary, but...with a necessity that takes nothing away from freedom because it takes nothing from the will and the use of reason."[18]

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[16] "Spinosa est allé plus loin: il paroit avoir enseigné expressement une necessité aveugle, ayant refusé l'entendement et la volonté à l'auteur des choses, et s'imaginant que le bien et la perfection n'ont rapport qu'à nous, et non pas à luy…il enseigne que toutes les choses existent par la necessité de la nature Divine, sans que Dieu fasse aucun choix. Nous ne nous amuserons pas icy à refuter un sentiment si mauvais et même si inexplicable." G VI, p. 217; H, p. 234.

[17] See Adams, *Leibniz: Determinist, Theist, Idealist* which features a reworked version of the article on pages 9-52. However, Adams does not think that Leibniz was strictly Spinozistic, as some other scholars have done. Ibid., p. 21.

[18] "Cum autem Deus sit mens perfectissima, impossibile est ipsum non affici harmonia perfectissima, atque ita ab ipsa rerum idealitate ad optimum necessitari...Hinc sequitur, quicquid factum est, fit aut fiet, optimum ac proinde necessarium esse, sed ut dixi necessitate nihil libertati adimente,

Adams argues that here Leibniz adopted a strongly necessitarian position and held that God was necessitated to create the best because of His nature. He apparently modified his position later, and argued that the actual world, and the things that existed in it, were not necessary but contingent, because other worlds were possible in which those things did not exist. Because there were other possible worlds that were prior to God's choice, the actual world was contingent.[19] In other words, God had several possible worlds to choose from. This argument is expressed in a memoir, *De libertate et necessitate* (1680-84 (?))[20], and *Essais de Theodicée*, §235:

> "God chooses among the possibles, and for that very reason He chooses freely and is not compelled; there would be neither choice nor freedom if there were but one course possible."[21]

Adams considers this argument to be Leibniz's most successful defence of contingency in the actual world. It is related to the distinction between hypothetical and metaphysical necessitation. The former is the necessity produced by foreknowledge (the opposite of which is conceivable but less good), and the latter is the true opposite of contingency (the opposite of which is inconceivable).[22] When God has several options, He is not

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quia nec voluntati et rationes usui." A II, 1, p. 117; Adams, *Leibniz: Determinist, Theist, Idealist*, pp. 10-11.

[19] Adams, *Leibniz: Determinist, Theist, Idealist*, pp. 12-13.

[20] A VI, 4, pp. 1444-49.

[21] "…Dieu choisit parmy les possibles, et c'est pour cela qu'il choisit librement, et qu'il n'est point necessité: il n'y auroit point de choix ny de liberté, s'il n'y avoit qu'un seul parti possible." G VI, pp. 258; H, pp. 272-73.

[22] "Mais supposé que Dieu la prevoye, il est necessaire…savoir qu'elle existe, puisqu'elle a été prevue, car Dieu est infaillible: c'est ce qu'on appelle une necessité hypothetique. Mais ce n'est pas de cette necessité dont il s'agit icy: c'est une necessité absolue qu'on demande, pour pouvoir dire qu'une action est necessaire, qu'elle n'est point contingente, qu'elle n'est point l'effect d'un choix libre." (*Essais de Theodicée*, §37) G VI, pp. 123-124. Leibniz also used in some cases the concept of moral necessity which usually means the same as hypothetical necessity in the sense that moral goodness inclines the will, but does not necessitate it. See Mates, *The*

metaphysically necessitated to choose this world because He can always choose some other world that is conceivable, but less good than the actual world.

Thus, Leibniz did not allow God to act from metaphysical (blind) necessity, which denied His intelligence and choice, but argued that His being hypothetically or morally necessitated to choose the best of all possible worlds was related to His wisdom. When God acts according to moral necessity, He is motivated by good reasons to act as He does. In other words, these reasons incline Him without binding him.

> "...even though it is certain that God would always choose the best, this does not prevent something less perfect from being and remaining possible in itself, even though it will not happen, since it is not impossibility but imperfection that causes it to be rejected."[23]

Adams argues that Leibniz was unable to escape the conclusion that it was demonstrable, and hence hypothetically necessary, that God, as an absolutely perfect being, does what is best.[24]

Leibniz understood hypothetical necessity to be a kind of freedom. In §288 of *Essais de Theodicée* he gave three conditions of freedom: intelligence (clear knowledge of the object of deliberation), spontaneity (the source of the action is within the agent)[25] and contingency (the exclusion of logical and

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Philosophy of Leibniz, p. 121; On the concept moral necessity, see Knebel, *Wille, Würfel und Wahrscheinlichkeit*, p. 127f.

[23] "…quoyque Dieu choisisse tousjours le meilleur asseurement, cela n'empeche pas que ce qui est moins parfait ne soit et demeure possible en luy même, bien qu'il n'arrivera point, car ce n'est pas son impossibilité, mais son imperfection qui le fait rejetter. " (*Discours de metaphysique*, §13). A VI, 4, p. 1548; AG, p. 46.

[24] Adams, *Leibniz: Determinist, Theist, Idealist*, pp. 39-40. This question is also discussed by Thomas Aquinas in *Summa contra gentiles*. See Kretzmann, *The Metaphysics of Creation*, pp. 131-36.

[25] Spontainety has been understood in various ways as the absence of any physical or psychological constraint or passion. Donald Rutherford distinguishes two senses of spontainety in Leibniz, both which involve freedom of will: 1) monadic spontainety (any substance is self-determining in the production of all its own states) and 2) agent

metaphysical necessity).[26] It could be argued in the context of the framework discussed above that God through His properties (foreknowledge, omnipotence and contingent choice) freely chooses the world He creates, although He is hypothetically necessitated by the qualities of the best world. This view could be questioned, however. If God finds that a certain possible world is the best, it seems that He cannot choose some another possible world since the choice would violate His nature, in other words His wisdom and goodness. Thus it would seem that He was not free in His selection after all.

Adams' response is to offer another Leibnizian defence of the contingency of the actual world, which is that the argument that this world is best is contingent.[27] Thus, although it may be hypothetically necessary that God chose the best, it is not necessary that this world is the best possible. Whereas the former is a consequence of God's nature, the latter cannot be demonstrated by finite analysis and is therefore contingent.[28] To use a formulation put forward by John Carriero, even if the existence of this world is externally necessitated by God (God is morally necessitated to choose the best world), it is contingent because the world is not internally necessitated (it is not necessarily the best of all possible worlds).[29] All in all, I think these two defences (as presented by Adams) are sufficient to show that blind, metaphysical necessity can be avoided in the Leibnizian

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spontainety (the agent is active in promoting change in the world). The former is related to the general metaphysical structure of the world and acts as the metaphysical foundation of freedom, while the latter is related to deliberation. Rutherford, *Leibniz on Spontainety*, p. 161f; see also Murray, *Spontainety and Freedom in Leibniz* and Greenberg, *Leibniz Against Molinism*.

[26] See G VI, p. 288.

[27] In their reviews of Adams' book, Carriero and Mugnai claim that this argument is in fact stronger than the first one of other-worlds-possible-in-themselves. For a discussion, see *Leibniz Society Review* 6, pp. 61-126.

[28] Adams, *Leibniz: Determinist, Theist, Idealist*, pp. 24-27.

[29] Carriero, *Review*, p. 63. On Carriero's criticism of Adam's views, see p. 66f.

system, although some details, such as the exact nature of infinite analysis, are not entirely clear.[30]

In his latest article on the topic, "Moral Necessity", Adams argues that moral necessity is essentially connected to final causes as opposed to efficient causes in Leibniz's metaphysics, since final causes lead to the good. Thus hypothetical necessity applies both to God and to human spirits, whose appetitions are related to final causes. While God cannot be mistaken in His judgement, men are led astray in their deliberations concerning the good because of their limited cognitive capability, as will be shown in Parts II and III. According to Adams, God's choice of the best of all possible worlds was the single most important and most foundational case of final causation in the Leibnizian scheme of things. Thus Leibniz was able to distinguish himself from Spinoza, who held that there were only efficient causes in nature.[31]

Adam's interpretation of Leibniz's views on freedom of the will in God's choice seems plausible to me. On the subject of human freedom I tend to agree with Robert Sleigh, who argues that human choices are in principle unpredictable by other created beings (although foreseen by God), in other words, they do not always follow the greatest apparent good even if they do not err in their judgements concerning the good.[32] As will be shown in Chapter 10.3., men may act akratically, in other words, choose wrongly, even though they may recognise the best act to be performed in a certain situation. This scenario is, of course, impossible for the supremely good divine decision maker, whose deliberations do not suffer from this kind of problem.

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[30] See Sleigh, *Leibniz and Arnauld*, pp. 83-89. I will return to infinite analysis in Chapter 5.

[31] Adams, *Moral Necessity*, p. 187. See also Spinoza, *Ethics* I, prop. XVI.

[32] Sleigh, *Leibniz on Freedom and Necessity*, pp. 249-54. There is a vast literature on human freedom in Leibniz's philosophy which I cannot discuss here. A good introduction to the topic is Rutherford and Cover (eds.), *Leibniz. Nature and Freedom*.

2. Models of Creation

The creation of the world was a gigantic task and only God could have done it. His will is inclined by the goodness of the best world, which satisfies the principle of sufficient reason He employed in His choice.[33] Thus the choice between possible worlds was based on reason.[34] Leibniz was consistently critical of Descartes, who thought that God created eternal truths.[35]

> "The infinity of possibles, however great it may be, is no greater than that of the wisdom of God, who knows all possibles…The wisdom of God, not content with embracing all the possibles, penetrates them, compares them, weighs them one against the other, to estimate their degrees of perfection or imperfection, the strong and the weak, the good and the evil.…By this means the Divine Wisdom distributes all the possibles it had already contemplated separately, into so many universal systems, which it further compares the one with the other. The result of all these comparisons and reflections is the choice of the best from among all these possible systems, which wisdom makes in order to satisfy goodness completely; and such is precisely the plan of the actual universe."[36]

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[33] According to the principle of sufficient reason, nothing happens without a reason for its being so and not otherwise. I will return to this principle in Chapter 4. 1.

[34] See *La Monadologie*, §53-55. Leibniz saw God's choice as a real choice between alternatives, whereas Spinoza considered creation simply the realisation of possibles. See Spinoza, *Ethics* I, prop. XVI and Adams, *Leibniz: Determinist, Theist, Idealist*, p. 21.

[35] See Leibniz, *Meditationes sur la notion commune de la justice.*

[36] "L'infinité des possibles, quelque grande qu'elle soit, ne l'est pas plus que celle de la sagesse de Dieu, qui connoit tous les possibles…La sagesse de Dieu, non contente d'embrasser tous les possibles, les penetre, les compare, les pese les uns contre les autres, pour en estimer les degrés de perfection ou d'imperfection, le fort et le faible, le bien et le mal…par ce moyen la Sagesse Divine distribue tous les possibles qu'elle avoit déja envisagés à part, en autant de systemes universels, qu'elle compare encor entre eux : et le resultant de toutes ces comparaisons et reflexions est le choix du meilleur d'entre tous ces systemes possibles, que la sagesse fait

The choosing of the best of all possible worlds is an infinitely complicated task and Leibniz argued that it was not possible to give an exact description of how this was performed in practice. He wrote in *Discours de metaphysique* (1686), §6 that he used certain comparisons (including not only descriptions of the structure of the best possible world but also some analogies in which he presented God as an excellent geometrician) to sketch an imperfect likeness of divine wisdom, but he did not claim to explain in this way the great mystery upon which the entire universe depended.[37]

These comparisons have given rise to various competing interpretations concerning the criteria employed in God's choice. Before going into these in more detail I will present the most complete citations that are relevant to them. One line of argument concerns the proportion between the variety of phenomena and the simplicity of laws (the variety/simplicity criterion[38]):

> a) "God has chosen the most perfect world, that is the one that is at the same time the simplest in hypotheses and the richest in phenomena, as might be a line in geometry whose construction is easy and whose properties and effects are extremely admirable and widespread." (*Discours de metaphysique*, §6)[39]

> b) "This is the way of obtaining as much variety as possible, but with the greatest order possible, that is it is the way of obtaining as much perfection as possible." (*La Monadologie*, §58)[40]

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pour satisfaire pleinement à la bonté; ce qui est justement le plan de l'univers actuel." G VI, p. 252; H, pp. 267-68.

[37] G IV, pp. 431-32.

[38] The term is from David Blumenfeld. See his *Perfection and Happiness in the Best Possible World*, p. 383.

[39] " …Dieu a choisi celuy qui est le plus parfait, c'est à dire celuy qui est en même temps le plus simple en hypotheses et le plus riche en phenomenes, comme pourroit estre une ligne de Geometrie dont la construction seroit aisée et les proprietés et effects seroient fort admirables et d'une grande étendue." (G IV, p. 431; AG, p. 39).

[40] "…c'est le moyen d'obtenir autant de varieté qu'il est possible, mais avec le plus grande ordre qui se puisse, c'est à dire c'est le moyen d'obtenir autant de perfection qu'il se peut." (G VI, p. 616; AG, p. 220).

Another line of argument suggests that the greatest variety of phenomena is founded on the simplest laws (the harmony of variety and simplicity[41]):

> c) "God makes most of the things He can and what obliges Him to seek simple laws is the need to find a place for as many things as can be put together; if He made use of other laws, it would be like trying to make a building with round stones, which make us lose more space than they occupy." (A letter to Malebrance, 22. 7. 1679)[42]

> d) "The necessary being acts in the simplest ways. For among the infinite possible ways there are certain simplest ones, but the simplest are the ones that offer the most." (*De existentia*)[43]

There is also at least one place in which Leibniz applied both kinds of description at the same time:

> e) "It follows from the supreme perfection of God that He chose the best possible plan in producing the universe, a plan in which there is the greatest variety together with the greatest order. The most carefully used plot of ground, place and time; the greatest effect produced by the simplest means; the most power, knowledge, happiness and goodness in created things that the universe could allow." (*Principes de la Nature et de la Grace, fondés en raison* (PNG), §10)[44]

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[41] The term is from David Blumenfeld. See his *Perfection and Happiness in the Best Possible World*, p. 389.

[42] "…Dieu fait le plus de choses qu'il peut, et ce qui l'oblige à chercher des loix simples, c'est à fin de trouver place pour tout autant de choses qu'il est possible de placer ensemble; et s'il se servoit d'autres loix, ce seroit comme si on vouloit employer des pierres rondes dans un batiment, qui nous ostent plus d'espace qu'elles n'occupent." G I, p. 331; L, p. 211.

[43] "Ens necessarium agere per simplicissima. Nam ex infinis possibilibus sunt quaedam simplicissima, sed simplicissima quae plurimum praestant. Gr, p. 267, cited and translated in Blumenfeld, *Perfection and Happiness in the Best Possible World*, p. 389.

[44] "Il suit de la Perfection Supreme de Dieu, qu'en produisant l'Univers il a choisi le meilleur Plan possible, où il y ait la plus grande varieté, avec le plus grand ordre: le terrain, le lieu, le temps, les mieux menagés; le plus d'effect produit par les voyes les plus simples; le plus de puissance, le plus

Thirdly, Leibniz argued that the best of all possible worlds contained the greatest quantity of essence or positive reality.[45] As I will show, these different kinds of description of its structure are prominent in competing interpretations of the formula of the best possible world.

The correct understanding of this issue is vital to this study, since Leibniz often argued that men should strive to imitate God in their actions within the limits of their cognitive abilities. Despite the differences, it is reasonable to suppose that he held that God's preferred way of choosing the best was normative to all rational decisions, especially as he frequently argued that God and men belonged to the same kingdom of grace and formed a society together. Acting wisely and pleasing God brought about happiness to created beings.[46]

In what follows I will first discuss the interpretation of Nicholas Rescher, presented in various articles, and consider the criticism of it given by David Blumenfeld in his article "Perfection and Happiness in the Best Possible Word" (1995), and Donald Rutherford in his book *Leibniz and the Rational Order of Nature* (1995).

2. 1. Nicholas Rescher's Trade-Off View

The first version of Rescher's interpretation of the divine decision model appeared in his book *The Philosophy of Leibniz* (1967) and in an article "Logical Difficulties in Leibniz's Metaphysics" in 1969, but my discussion focuses mainly on his second paper on the subject, called "Leibniz on Creation and the Evaluation of Possible Worlds" (1974), which represents a more mature view and is the most well-known representation of his views.[47] Rescher takes it as

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de connoissance, le plus de bonheur et de bonté dans les creatures, que l'Univers en pouvoit admettre. " G VI, p. 603; AG, p. 210.

[45] "Perfectio autem est quod plus essentiae involvit." (a fragment concerning universal characteristics) G VII, p. 195.

[46] See *La Monadologie,* §86-90 and *Nouveaux Essais* I, i, §4.

[47] I have used a revised version of the paper, issued as part of the book *Leibniz's Metaphysics of Nature*. Rescher's latest version is his 1996 paper

his task to answer the following question: "What is the criterion which God who seeks to actualise the best of all possible worlds employs in identifying it? By what criterion of merit does God determine whether one possible world is more or less perfect than another?"[48]

He cites some passages to explicate his views, such as citation a) above and *Essais de Theodicée*, §208 ("The ways of God are those most simple and uniform: for He chooses rules that least restrict one another. They are also the most productive in relation to the simplicity of ways and means.")[49]

Rescher takes as his point of departure the simplicity/variety criterion and argues that the best world has an optimal balance between variety and order. The world could be simpler in its laws (for example, it could consist of only one element, such as iron), and there may be more phenomena (species, for example), but this optimal balance is the reason why it stands out to God in His deliberation.[50]

He goes on to investigate the nature of order and variety, arguing that the most essential feature of order is not the lawfulness of possible worlds as such (a possible world always has some kind of order), but the relative simplicity or the economy of the laws. As far as variety was concerned, Leibniz distinguished between two principal aspects: a) fullness or completeness (*fecunditas*), or comprehensiveness of content, and b) diversity and richness, and variation and complexity. One important aspect of variety is its infinitude: the variety in the world is not just a matter of the number of substances, but also includes the infinite multiplicity of the forms or kinds they exemplify.[51]

"Leibniz On Possible Worlds", but the basic idea concerning the evaluation of the best world remains the same.

[48] Rescher, *Leibniz's Metaphysics of Nature*, p. 3.

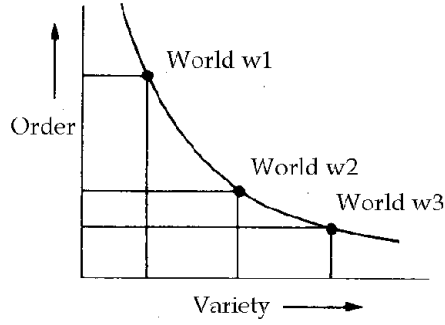
[49] "Les voyes de Dieu sont les plus simples et les plus uniformes: c'est qu'il choisit des regles, qui se limitent le moins les unes les autres. Elles sont aussi les plus fecondes par rapport à la simplicité des voyes." G VI, p. 241; H, p. 257.

[50] Rescher, *Leibniz's Metaphysics of Nature*, p. 4.

[51] Ibid., pp. 5-6.

Rescher considers the criteria of variety and order to be jointly operative and mutually conditioning. It was characteristic of Leibniz to think that the idea of combination and balance between these factors was in a state of mutual tension or that they were conjoint but potentially conflicting yardsticks of perfection. As I will show, this opposition of order and variety has proved to be unacceptable to Rescher's critics.

He illustrates Leibniz's formulation of the best world in citation a) above in the following figure:[52]



In this model the possible worlds are presented along a curve of feasible order/variety combinations. The first one (w_1) is very orderly, but lacks variety, and $world_3$ has variety but lacks order. Therefore the best world is $world_2$, which is both orderly and includes variety, but neither feature dominates. Rescher argues that Leibniz opposed the traditional *summum bonum*-theories, in which perfections are added up, and rather thought that the order/variety combination was in this world as large as could be realised within the realm of realisability.[53] It is for this reason that Rescher's theory is commonly called the trade-off-theory.

The best world represents the optimal combination of criteria, in other words, the highest degree of perfection. Perfection in itself is not a simple concept, because it is understood as the result of the

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[52] The source for the figure was Rescher, *Leibniz's Metaphysics of Nature*, p. 9.

[53] Ibid., p. 10.

multiplication of order and variety (O x V).[54] The criteria are in dynamic tension with regard to each other, that is, they cannot be reduced to each other. There is an infinite number of possible combinations between them. In Rescher's economics terminology these factors are related not by a fixed exchange ratio, but by variable trade-offs with diminishing marginal returns for both parameters.[55]

Due to this opposition of the factors, the less variety a world contains – the more monotonous and homogeneous it is – the simpler its laws will be; and the more complex its laws, the greater the variety of phenomena required to realise them. Laws that are too simple produce monotony and phenomena that are too varied produce chaos. Therefore, there is no direct co-operation involved between these criteria in the sense that the one produces the other.[56] Nevertheless, these factors produce the highest degree of perfection in the best possible world as an outcome of their opposition.

It would be misleading to suggest that God would primarily maximise a single quantity such as essence since this in itself was a function of several distinct parameters, specifically variety and order.[57] Thus the greatest quantity of essence follows from the optimum between order and variety.[58] Rescher compares this process to infinite-comparison processes that are familiar from differential calculus and the calculus of variations, a mathematical doctrine that is the subject of the next section. He cites the

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[54] In his latest paper on the issue, "Contingentia mundi", Rescher compares the process with measuring the area of a rectangle as the product of its base and its height, where the resultant equivalue curve is a hyperbola. The example in *Initia et specima*, discussed in Chapter 11.3.1. is exactly this kind of measurement. Rescher, *On Leibniz*, n. 23, p. 66.

[55] Rescher, *Leibniz's Metaphysics of Nature*, p. 11.

[56] Ibid., pp. 10-11.

[57] Ibid., p. 11.

[58] To follow Gregory Brown's formulation, one could also say that the ratio or degree of perfection of a possible world is an outcome of variety and order. See Brown, *Leibniz's Theodicy and the Confluence of Worldly Goods*, p. 455.

following passage from the 1697 essay *De rerum originatione radicali* to illustrate his interpretation:

> "Hence it is very clearly understood that out of the infinite combinations and series of possible things, one exists through which the greatest amount of essence or possibility is brought into existence. There is always a principle of determination in nature that must be sought by maxima or minima; namely, that a maximum effect should be achieved with a minimum outlay, so to speak."[59]

Rescher goes on to argue that the main inspiration behind Leibniz's views lay in mathematics. "Determining the maximum or minimum of that surface-defining equation which represents a function of two real variables specifically requires those problem-solving devices for which the mechanisms of the differential calculus was specifically devised."[60]

The same optimum principle produces an additional feature of the best world; it is not only perfect as a whole, but also perfect in each part. Thus the best possible world includes perfection in every detail. Its structure is such that in each of its parts there is an optimal balance between order and variety, and it is this that provides the ideal solution to the creation problem.

Rescher's interpretation thus leans heavily on the mathematical idea of the calculus of variations. In order to make the trade-off model more transparent, I will now take a short excursion down this road.

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[59] "Hinc vero manifestissime intelligitur ex infinitis possibilium combinationibus seriebusque possibilibus existere eam, per quam plurimum essentiae seu possibilitatis perducitur ad existendum. Semper scilicet est in rebus principium determinationis quod a Maximo Minimove petendum est, ut nempe maximus praestetur effectus, minimo ut sic dicam sumtu." G VII, p. 303; L, p. 487.

[60] Rescher, *Leibniz's Metaphysics of Nature*, p. 12. In what follows, I shall use the expression "maximum *or* minimum" to refer to optimum in the sense of the trade-off view. I will explain the context in more detail in section 2.4.2.

2. 1. 1. Optimums and Calculus of Variations

Rescher offers a host of analogies in Leibniz's thought that are based on a tension between order and variety. Of special interest is art. Leibniz saw the harmony of a great work of art as a combination of a variety of effects within a structural unity of workmanship. The paradigm case is Baroque music and its ordered variations, the rhythms and rhymes of poetry, the beat and the cadence of dance.[61] Other examples of optimal design are to be found in architecture, such as the landscape gardening of Versailles and Herrenhausen.[62] The perfection in these works of art imitates universal perfection on a smaller scale and possess a mathematical beauty. They represent optimal forms in the sense we will discuss in section 2.4.2.[63]

The combination of different elements is also important in science, justice, statecraft and church politics, in which the positions of different parties often have to be reconciled. Scientific explanations must succeed at combining a wide variety of phenomena within the unifying range of a simple structure of laws - a good example would be gravitation.[64] Another example is in Leibniz's dynamics, according to which the substance is subjected to different forces and the result of this conflict between them determines the direction the substance takes in its movement from one state to another. As will be discussed in Chapter 10.2.1., this is also how judgement is formed in the mind – the different inclinations towards various goods are contrasted and the final judgement is a product of this contrast.

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[61] Ibid., p. 8.

[62] Brown, *Leibniz and Aesthetic*, p. 73.

[63] The connection between art and mathematics was established by Plato and given an expanded formulation by Augustine and Boethius. (Loemker, *Struggle for Synthesis*, p. 179). For example, music was based on a selection of harmonising numbers, and was therefore a miniature model of the world in number and measure.

[64] For a discussion, see Gale, *Did Leibniz have a Practical Philosophy of Science*?

The idea of optimisation is prominent in various areas of Leibniz's thought: metaphysics, the philosophy of the mind, aesthetics, practical rationality and justice. It is an instance of a larger doctrine of mathematical physics, which has its roots in differential calculus. Today the doctrine is known as the calculus of variations.

Isaac Newton first proposed the optimisation problem in Book II of his *Principia*, in which he considered the motion of objects in water. In the s*cholium* to Proposition 34 in the third edition he described the shape that a surface of revolution moving at a constant velocity in the direction of its axis must have if it is to offer the least resistance to the motion. He assumed in the solution he put to Gregory in 1694 that the resistance of the fluid at any point on the surface of the body was proportional to the component of the velocity that was normal to the surface.[65] He thought his solution might be useful in the building of ships, and he was right – optimisation problems were to become an essential feature not only in ship-building but also in the building of submarines and aeroplanes.[66] They thus have practical value in the creation of new methods for design, manufacture and mechanics, and are also relevant in physics and metaphysics.

Newton's idea and Galileo Galilei's earlier experiments with geometrical calculus led Johan Bernouilli in *Acta Eruditorum* (June 1696) first to solve and then to propose as a challenge to other mathematicians a related problem known as the brachistochrone problem. This had already been posed by Galileo in 1630 and 1638, but his solution (according to which the optimal curve is the arc of a circle) was defective.

As posed by Bernouilli ("Mechanical Geometrical Problem on the Curve of Quickest Descent"), the problem is as follows. Let two points A and B be given in a vertical plane. Find the curve that a point M, moving on a path AMB, must follow such that, starting from A, reaches B in the shortest time under its own gravity. While

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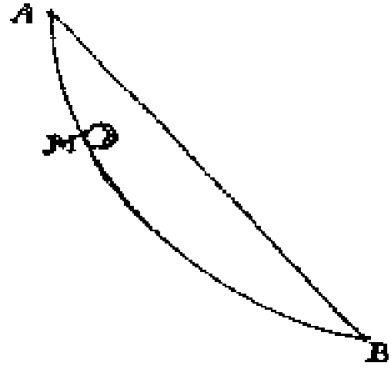
[65] Kline, *Mathematical Thought from Ancient to Modern Times*, p. 573. For the details, see Goldstine, *A History of the Calculus of Variations from the 17th through the 19th Century*, pp. 7-29.

[66] Kline, *Mathematical Thought from Ancient to Modern Times*, p. 574

the initial velocity is given, friction and air resistance are neglected.[67] Thus Bernoulli's problem was to find a minimum curve from among an infinity of possible paths that the moving point M could take in its motion from point A to point B. He made it clear that the straight line AB was not the right answer, since although it represented the shortest distance between the points A and B, it was not the line that was travelled in the shortest time. The solution is shown in the figure below.



The optimal curve is not the straight line (AB) because gravity affects the moving point. The solution, called brachistochrone, is represented by a cycloid. The result turned out not to be a mere single solution to a particular phenomenon but a metaphysical general rule, which was later reformulated by Maupertuis as the principle of least action.[68] The brachistochrone problem was to play an important role in mathematical physics, and was the first

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[67] For a modern formulation of the problem, see Kline, *Mathematical Thought from Ancient to Modern Times*, pp. 574-75.

[68] On the priority of discovering the principle of least action, see Couturat, *La logique de Leibniz*, pp. 577-78. Maupertuis' idea is related to the optical experiments in Ancient science described by Heron of Alexandria in his *Catoptrics*, which applied the principle of shortest path and the least time to problems of reflection from concave and convex spherical mirrors. In medieval times the idea that nature did nothing in vain was a common view. For example, Robert Grosseteste argued that nature always acted in the mathematically shortest and the best possible way. Kline, *Mathematical Thought from Ancient to Modern Times*, p. 580.

of a series of problems underlying the formulation of the calculus of variations.

The correct solution to the problem posed by Bernouilli was found by Newton (anonymously), Leibniz (who called it a "splendid problem"), L'Hopital and Jacob Bernouilli. They all arrived at the same answer: the brachistochrone was the cycloid.[69] In the 17th century Snell, Fermat and Leibniz, among others found support for the basic idea of the calculus of variations in various phenomena.[70] According to Fermat, light always travelled the path that required the least time and his law of refraction eventually became known as Snell's law.[71] By the end of the century mathematicians were persuaded to believe that nature did, in fact, try to maximise or minimise some important qualities.

Euler developed the problem further in 1734 by generalising it to minimise quantities other than time and to take into account resisting media. He developed a method for variating arbitrarily selected coordinates and calculated the variation in the integral. Although he did not fully utilise the results of his experiments in his 1744 work *Methodus Inveniendi Lineas Curvas Maximi Minimive Proprietate Gaudentes*, he produced simple and elegant formulas that could be applied to a large variety of problems.[72]

Maupertuis started from Fermat's principle, but modified it significantly. According to him, any changes in nature were such as to minimise the action. He gave physical reasons, but was also motivated by theological considerations, and tried to show that

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[69] Ibid., p. 575. For details of the individual solutions, see Goldstine, *A History of the Calculus of Variations from the 17th through the 19th Century,* p. 30f.

[70] For a detailed discussion of these developments, see Stein and Wiechmann, *New Insight into the Beginning of Optimization and Variational Calculus in the 17th Century.*

[71] For a detailed presentation of Fermat's and Snell's role as the predecessors of the calculus of variations, see Goldstine, *A History of the Calculus of Variations from the 17th through the 19th Century.* Leibniz gave his own account of the history of refraction in *Discours de metaphysique*, §22.

[72] Kline, *Mathematical Thought from Ancient to Modern Times*, pp. 576-79. On Euler's results, see Goldstine, *A History of the Calculus of Variations from the 17th through the 19th Century*, pp. 67-107.

nature reflected on the perfection of God in being as economical as possible. In this he was joined by Euler, who argued that God must have constructed the universe in accordance with some such basic principle, and that the existence of such a principle evidenced His hand.[73] The work of Euler and Maupertuis had a direct predecessor in Snell, Fermat and Leibniz.

In his latest paper on the subject, "Contingentia Mundi" (2002),[74] Nicholas Rescher compares the creation of the best possible world to the brachistochrone solution, thus relating the trade-off-view directly to the calculus of variations.[75] He argues that the brachistochrone solution involves the balancing of two parameters, namely the average speed of travel and the distance travelled, both of which increase by a steeper initial descent. In each case a gain on the one side is offset by a loss on the other. In the calculus of variations the objective is to find a unique (easiest, optimal) path among an infinite number of alternative paths that achieves the extremisation (maximisation or minimisation) of some specified characteristic (time or distance, for example). An essential feature of these kinds of problem is the fact that the solution is an optimal combination of competing factors. Rescher's view could be seen as a response to this citation from *Essais de Theodicée*, §8 (which he does not mention):

> "…even though one should fill all times and all places, it still remains true that one might have filled them in innumerable ways, and that there is an infinitude of possible worlds among which God must needs have chosen the best, since he does nothing without acting in accordance with supreme reason."[76]

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[73] Kline, *Mathematical Thought from Ancient to Modern Times*, pp. 581-83.

[74] The paper was originally issued in *Studia Leibnitiana* 33 (2002), pp. 145-62. I refer to the unchanged reprint in Rescher's book *On Leibniz*.

[75] Leroy Loemker formulates the optimisation process as follows: "Leibniz's argument rests upon the old discovery that maxima and minima involve in their determination the reduction of two equal values to a single one. He views this as an instance of the metaphysical principle of maximal determination or of the optimum. L, p. 484, n. 6.

[76] "…quand on rempliroit tous les temps et tous les lieux, il demeure tousjours vray qu'on les auroit pu remplir d'une infinité de manieres, et

According to Rescher's interpretation, the optimal and most unique combination of minima (order) or maxima (variety) (where these factors lead in opposite directions) is simply the best of all possible worlds. "This infinitely complex assessment of the cooperative merit that grounds claims upon God's consideration for actualization is exactly the sort of process that is at issue in those calculations of variations problems."[77]

Rescher has attracted some support in this,[78] but he has also received significant criticism. I will turn next to a detailed critique by David Blumenfeld, which he gives in his article "Perfection and Happiness in the Best Possible World" (1995).

2. 2. David Blumenfeld's Maximum View

Blumenfeld finds Rescher's interpretation plausible, but mistaken. His main criticism concerns the idea of a trade-off between variety and order. The reason given is Leibniz's frequent references to the real world being the richest one and containing the greatest conceivable variety of phenomena. Repeating the passages from DM, §5 & §6 referred to above, among others, he argues that God was not required to trade off variety in His selection of the best of all possible worlds and that the best world maximized one quality, which was reality or essence.[79] Thus the world with the largest amount of essence was the best of all possible worlds.[80]

However, he agrees with Rescher in that essence, in itself, is not independent of variety and order. The extent of the world's essence is the same thing as its degree of harmony, and the latter is determined by variety and simplicity.[81] As harmony and perfection come to the same thing, the best of all possible worlds

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qu'il y a une infinité de Mondes possibles, dont il faut que Dieu ait choisi le meilleur, puisqu'il ne fait rien sans agir suivant la supreme raison." G VI, p. 107; H, p. 128.

[77] Rescher, *On Leibniz*, p. 52.

[78] See Gale, *On What God Chose: Perfection and God's Freedom* and Brown, *Leibniz's Theodicy and the Confluence of Worldly Goods*.

[79] Blumenfeld, *Perfection and Happiness in the Best World*, p. 386.

[80] Ibid., p. 394.

[81] Ibid., p. 395.

thus has the greatest degree of perfection (which forms the basis for the greatest quantity of essence).

Blumenfeld also argues against Rescher that the world with the most variety has the largest number of individuals, in other words the most monads. One problem with this doctrine is Leibniz's lack of clarity: he claimed in some passages that the best world has a maximum number of phenomenal entities, and in others that it has the most monads. Blumenfeld argues that Leibniz held both of these views, and that the solution to this apparent paradox is that the maximum of phenomenal entities is founded on the maximum number of monads.[82] Thus his point of departure is the second group of citations given above, whereas Leibniz was apparently suggesting that richness was founded on the simplicity of the laws.

Another difficulty with the trade-off view lies in Leibniz's doctrine that simplicity is a means to variety, in other words that in order to achieve the greatest variety God is required to use the most simple laws. Blumenfeld refers to citations c) and d) in the beginning of this chapter to support his views. The simplicity of laws is productive concerning variety; God should use the most simple laws because they will produce the most variety. Moreover, maximally simple laws are architectonic, in other words maximally productive: the greater the number of maximally simple laws the higher the simplicity index of a possible world, and the world with the highest simplicity index is a means to the greatest variety. I agree with Donald Rutherford that this view is problematic.

Blumenfeld concludes that the best world contains the most diverse phenomena *and* the most simple laws of nature. Only the largest system of maximally efficient (simple and architectonic) laws can produce the greatest possible variety, and consequently the best world has the largest consistent set of architectonic laws together with the greatest conceivable variety.[83] This gives rise to essence. Thus, "The best possible world = the most harmonious one = the one that has the maximum of variety and the maximally

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[82] Ibid., p. 387.
[83] Ibid., pp. 389-92.

simple laws = the one with the most phenomenal individuals and the most monads = the one with the most reality or essence."[84]

An additional feature of perfection, namely universal observability, arises from the number of universal laws: the more there are, the larger the number of possible universal observations. According to Blumenfeld, universal laws cover their phenomena in a perfectly regular way, and different laws cover different phenomena which is why the world with the most universal laws will have the greatest variety of phenomena governed in the most regular fashion. This regularity, again, is related to harmony, which at the same time contributes to the greatest conceivable beauty the best world possesses.[85]

2. 3. Donald Rutherford's Maximum View

In his book *Leibniz and the Rational Order of Nature* Donald Rutherford points out some difficulties related to Blumenfeld's understanding of the simplicity of laws, although he generally agrees with his opposition to the trade-off view and his contention that the best world contains a maximum amount of one single property, in other words essence.

According to Rutherford, God is principally moved to maximise the metaphysical goodness in the world, or the greatest sum of perfections. Hence the production of the greatest variety is not necessarily the desired goal, although he also holds that God creates the greatest variety of beings. If simplicity were to be understood as an algebraic degree, it is hard to see how it could be the most productive in terms of variety. Very simple laws could arguably be considered less than maximally effective in their productivity because they could cover only the most basic cases. If simplicity were understood as freedom from exceptions, however, it would be easier to understand how the laws could produce variety.[86]

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[84] Ibid., p. 394.
[85] Ibid.
[86] Rutherford, *Leibniz and the Rational Order of Nature*, pp. 27-28.

Rutherford argues that the most promising solution to the simplicity problem is to be found in the memoir *Tentamen anagogium* (1696), Leibniz's principal text on architectonics in which he claimed that God's supreme wisdom inclines Him to choose the natural laws that are the "simplest and most determined."[87] Simplicity in this sense is thus not related to the production of a greater variety of phenomena, while it is clearly related to God's wisdom in His choice of the best of all possible worlds: it may have more to do with God's preference for greater order and the intelligibility of the best world.[88]

According to Rutherford, "What simplicity or universality, on the one hand, and efficiency or determinateness, on the other, have in common is that they represent types of order that are especially satisfying to reason: orders in which a single principle suffices to account for the widest possible range of cases, or in which an outcome is determined through a unique optimising solution."[89] This optimal order enables God to produce a maximum of metaphysical goodness.

Moreover, the most important of God's principles in His choice is not the variety/simplicity criterion favoured by Rescher and Blumenfeld. God is rather an engineer, striving for the optimal design of a world in which maximum perfection and variety can be realised. Maximum perfection requires an optimal world order that enables the co-existence of the greatest possible variety of beings and metaphysical goodness.[90]

Thus, according to Rutherford, the optimal order is not necessarily related to the simplicity of laws. Referring to PNG, §11 ("God's supreme wisdom has led him…to choose laws of motion that are best adjusted and most suitable with respect to abstract or metaphysical reasons"),[91] he argues that of the laws God selects for

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[87] See Rutherford, *Leibniz and the Rational Order of Nature*, p. 28. Leibniz discussed the same theme in DM, §22.

[88] Ibid., p. 28.

[89] Ibid., p. 29.

[90] Ibid., p. 26.

[91] "La Sagesse Supreme de Dieu l'a fait choisir surtout les loix du Mouvement les mieux ajustées, et les plus convenables aux raisons abstractes ou metaphysiques." G VI, p. 603; AG, p. 210.

the best of all possible worlds, some may embody a simplicity that is productive of greater variety and some may merely produce greater order and intelligibility.

The latter kind of laws best represent God's idea of the best natural order. The most important of these laws is the principle of continuity, according to which no "gaps" are allowed between the states of substances (the "fullness" of the world being maximized). Thus changes of time, place or motion are always continuous in the sense that they occur through an infinite series of smaller gradations.[92] Rutherford emphasises the universal connectedness of substances, holding that every state of every monad within a group is spatiotemporally and causally ordered with respect to every state of every other monad in it.[93]

As a consequence of God's selection of the principle of continuity ("the principle of general order")[94] as the optimal order of the world, He is able to create both the greatest variety of beings and the greatest total perfection or "quantity of essence."[95] Hence the principle of continuity is the principle of optimal order, which regulates the creation of substances. "Although there may seem to be a tension between wisdom's favouring certain types of order as a means to the maximisation of perfection and its favouring order as pleasing in itself, Leibniz evidently believes that these two ends in general support one another."[96] Thus, in Rutherford's view the amount of essence is not an outcome of the variety/simplicity criterion as it is in Rescher and Blumenfeld, but it is rather related to the principle of optimal order.

By observing the principle of continuity in creation, God can create the most complete series of beings and the greatest total perfection or quantity of essence given that there are no gaps between degrees of perfection. In this way the principle of order enables the creation of the maximum of compossible beings. Thus,

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[92] See *Nouveaux essais*, preface and Rutherford, *Leibniz and the Rational Order of Nature*, p. 29.
[93] Rutherford, *Leibniz and the Rational Order of Nature*, p. 188.
[94] See G III, p. 51.
[95] Rutherford, *Leibniz and the Rational Order of Nature*, pp. 29-30.
[96] Ibid., p. 31.

by observing the principle of continuity He is able to create the best of all possible worlds.[97] Rutherford argues: "The problem of creation comes down to a consideration of the best way of "filling" a world, whose structure is minimally determined by the orders of space and time."[98]

Rutherford compares the creation with a tiling problem involving a search for the optimal method of paving a given surface. God chooses a world the order of which permits the coexistence of the greatest number of compossible monads containing the greatest total sum of perfection. The optimal order, represented by the principle of continuity, is a necessary condition for the harmonious whole. The tiles in this analogy, of course, are the monads, which are compared with infinitely divisible organisms. From this it follows that there is an infinite amount of variety.[99] In sum, Rutherford holds that by finding a world with the best order God is able to create a maximum number of substances that are in a continuous and harmonious relationship with each other. This whole contains the greatest quantity of essence, which is the foundation of the best of all possible worlds.

2. 4. Optimum or Maximum?

I will now give an evaluation of these three interpretations of God's criteria in His choice of the best of all possible worlds. Because Leibniz did not offer any conclusive evidence for or against any of these interpretations, they are all certainly possible. In what follows I will discuss the criticisms made by Blumenfeld and Rutherford against the trade-off view, and consider whether their interpretations are better alternatives in terms of describing God's criteria for the best world. I will first consider Blumenfeld's maximisation view and compare it to Rescher's views, since both emphasise the centrality of the variety/simplicity criterion in God's deliberation. I will then consider Rutherford's version of the maximisation view and various specific problems related to it.

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[97] Ibid., p. 30.
[98] Ibid., p. 189.
[99] Ibid., pp. 201-203.

2. 4. 1. Does simplicity produce variety?

The essential difference between Rescher's and Blumenfeld's views concerns how order and variety and their relation to each other are to be understood. Blumenfeld holds that God creates everything he can, in other words, a set of maximally simple laws produces a maximum amount of variety, a maximum number of individuals, a maximum amount of essence and a maximum amount of observability and beauty. Rescher, on the other hand, thinks that God creates a set of compossible substances employing a calculus that optimises the ratio of variety to order which means that neither variety nor order, taken on their own, reach the maximum, and it is from this optimum that all the other features of the best world derive, representing in their entirety the highest degree of perfection among all possible worlds.

In the light of the existing textual evidence, both views can be defended. For example, take DM, §6 ("God has chosen the one that is most perfect, in other words the one that is at the same time the most simple in hypotheses and the richest in phenomena"). While this passage clearly supports the maximisation theory ("most simple"-"richest"), it could also be taken as referring to an optimum in which the "most simple" (most determined) hypotheses are optimised with the greatest possible variety, with the result that the combination of these features produces the world with the greatest overall perfection.

According to the trade-off view, when we think of the calculus of variations discussed above, the primary feature is an interest in extremal functions, and those making the functional attain a maximum or minimum value. Thus Leibniz may well have used the words most simple and richest in the sense of minimum or maximum. Alternatively, he could have used them in a relative sense – since the best world contains simple or economic laws and an infinity of variety, the optimum does not mean that the best world is lacking in order or variety because possible worlds are infinite compossible wholes.[100] For this same reason, Blumenfeld's

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[100] For a discussion of Leibniz's views on infinity, see Arthur, *Leibniz and Cantor on the Actual Infinite.*

and Rutherford's interpretations, which argue that the goodness, beauty and harmony of the best world are essentially founded on the idea of the best world having a maximum amount of substances, are unsatisfactory.[101]

I will now turn to the first argument, which is directly related to Leibniz's architectonics and the calculus of variations. According to Blumenfeld, the co-operation is caused by architectonic laws, which are maximally effective concerning variety. However, it remains unclear how exactly the "greatest effect" is "produced by the most simple means." It hardly seems probable that very simple laws would be maximally productive.

As Rutherford argues, it would be more promising to adopt the suggestion frequently put forward by Leibniz that scientific laws should explain as many phenomena as possible, thereby having a high degree of universality. Leibniz seems to have confirmed this supposition in *Tentamen anagogium*, arguing that an architectonic law is at its most simple when it is the most determined or easiest. This claim, however, is something different from mere simplicity in a literal sense as I will show shortly.[102]

If we assume that this interpretation of architectonics is adequate, we should then consider whether this new understanding affects the trade-off/maximum controversy. If we replace Blumenfeld's most simple laws with the most determined, will a maximum amount of variety follow? It seems unlikely. Leibniz gave the following example in *Tentamen anagogium*:

> "Assume the case that nature were obliged in general to construct a triangle and that for this purpose only the perimeter or the sum of the

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[101] See also Brown, *Does the Best of All Possible Worlds Contain the (Absolute) Most*?, pp. 107-08

[102] See G VII, p. 270. However, I will argue against Rutherford that the nature of architectonic laws is connected to final causes rather than to universality or continuity. For example, in *Essais de Theodicée*, §211 Leibniz argues: "On m'objectera, qu'un systeme fort uni sera sans irregularités. Je reponds, que ce seroit une irregularité d'être trop uni, cela choqueroit les regles de l'harmonie." G VI, p. 244.

> sides were given, and nothing else; then nature would construct an equilateral triangle."[103]

If nature strives for maximal variety, why should it form an equilateral triangle, in which all the angles are equal and all the sides are equally long? Would it not rather produce one with more variety, such as a right-angled triangle with sides of different lengths and a distinguishing feature, the right angle. Judging from this passage, it looks as if the simplest laws (in the sense of most determinate) contribute to regularity rather than to variety.[104]

When this new understanding of the simplicity of laws is applied to the trade-off view, there seem to be less severe problems. Let us suppose we have a collection of the most determinate laws combined with variety. Because the trade-off theory does not explain variety as literally produced by simple laws, the change does not affect it very much. The implication is rather that order is optimised with variety, and therefore the fact that each possible world includes some kind of order suffices to satisfy its requirements in this respect. Laws understood in this way are clearly practical in terms of God's suggested optimum.

Furthermore, if there is no masterplan behind these simple laws, what guarantees that the collection of phenomena produced is a harmonious whole? Rescher agrees with Catherine Wilson that the creation of the best world cannot be a mechanical process, such

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[103] "Supposons le cas que la nature fut obligée generalement de construire un triangle, et que pour cet effect la seule peripherie ou somme de costés fut donnée et rien de plus, elle construiroit un triangle equilateral." G VII, p. 278.

[104] In a small fragment *De necessitate eligendi optimum* (1677?) Leibniz argues that the wisest course is to choose the equilateral triangle because all points (from which the triangle is formed) are treated in the same way. For this reason all such triangles are similar to each other and therefore they are the lowest in the hierarchy of triangles: "Ponamus tria puncta dari ut ex illis formetur triangulum: ajo sapientem (si nulla sit ratio specialis aliter agendi) formaturum inde Triangulum aequilaterum, ita enim omnia puncta eodem modo tractantur. Et Triangulorum aequilaterum Species est infima, seu omnia triangula aequilatera sunt inter se similia." A VI, 4, pp. 1351-52.

as the simple maximisation of all compossible substances.[105] The process involves such complicated elements and unknown features that it surpasses the abilities of any mechanistic process. The worlds that are conceived by this method might be possible as alternative worlds, but this real world must have been conceived by some other method in order to guarantee its uniquely best quality.[106]

However, even though Blumenfeld's argument does not suffice to explain the relationship between simple laws and the variety of phenomena, his criticism of the trade-off-theory is valid in some respects. He notes that it sufficiently cannot explain the central passage of PNG, §10 (citation e) at the beginning of this chapter), which explicitly links the simplicity of laws and variety. Even if the simplicity of laws is understood from an architectonic perspective, it remains problematic how the effect can be produced by the most simple means unless they have something to do with other means – some kind of co-operation seems to be required.

Rescher's response was to present the opposition of criteria as a special kind of co-operation that allowed conflict, but gave as a result something more than the mere sum of the criteria involved. They pull in opposite directions, but by multiplying them more is achieved than by simply adding them up. God's infinite wisdom is shown in the fact that out of various criteria he chooses just these to produce the optimum.

In his latest article on this issue, "Contingentia mundi", he defends his view by explaining that variety is to be seen as contributing to order at a higher level, although the two are in opposition from the first-order standpoint. While admitting that the maximum view is certainly possible, Rescher argues, referring to Blumenfeld, that the simple pattern AAAAAAAA…is, in fact, not more but less orderly than the more complicated pattern

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[105] Rescher, *On Leibniz*, p. 52. For a contrasting view, see Roncaglia, *God's Evaluation of Possible Worlds and Logical Calculus*, p. 86.

[106] Wilson, *Plenitude and Compossibility in Leibniz*, pp. 12-15. Leibniz wrote to Bourguet 3. 4. 1716: "Les idées ou essences sont toutes fondées sur une necessité independante de la sagesse, de la convenance et du choix; mais les existences en dependent." G III, p. 592.

ABABABAB…, which a greater variety of components makes possible. He uses a Händel oratorio as an example: it achieves a higher order (more perfection) than a beginner's flute exercise just because it includes a wider variety of components.[107] He thus holds that a harmonious whole requires the interplay of different elements in order to reach the highest degree of perfection.

Rescher's view cannot be supported by any conclusive evidence that I know of, since Leibniz confined himself to describing God's creation with metaphors (compare DM, §6). However, in my view, it is reasonable in terms of understanding God's architectonics, and it has indirect textual support from Leibniz's writings on metaphysics (*Tentamen anagogium*, which I will turn to below) and from aesthetics, as shown in Chapter 2.1.1. above. I offer just one more example here – Leibniz's letter to Arnauld from 1671, in which he describes the evaluation of a good man (beauty) with respect to Canon law.

> "Presuming that a man has wisdom of the third degree and power of the fourth degree, his total estimation would be twelve and not seven, since wisdom be of assistance to power."[108]

According to this example, the optimum between separate factors can produce more beauty than mere mechanical addition. Although power and wisdom are separate continuous factors, the outcome of their opposition is something more than their mere combination. Leibniz suggested here that wisdom could be of assistance to power, but he does not say that it produces power in the literal sense. It is rather the interaction between power and wisdom that gives rise to a good man. This suggests that he may have considered perfection not as a mere sum of perfections, but rather as an optimum arising from a mutual tension between separate factors, as in the calculus of variations.

While PNG, §10 implies that there is a direct connection between laws and phenomena, there are a lot citations in which

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[107] Rescher, *On Leibniz*, p. 60.

[108] "Fac aliquem esse sapientem vt 3, potentem vt 4: erit tota eius aestimatio yt 12, non vt 7, nam quouis potentiae gradu sapientia vti potest." A II, I, p. 174.

this connection is left unclear, or presented in a metaphorical manner. As Leibniz was apparently reluctant to describe God's choice of the best world in detail, I think that the passage cannot be judged as the single true indication of his views and I am inclined to interpret it as a metaphorical description of the structure of the best possible world.

If we consider the context of PNG, §10, he first claimed that in the best world there is the "greatest variety together with the greatest order". If he intended to pursue the point here, why did he not repeat the argument in his next phrase, in which he stated that variety was an effect of order? Furthermore, in the above example of a good man he used a similar kind of metaphorical expression to describe an optimum in suggesting that "wisdom be of assistance to power".

In sum, Blumenfeld's maximisation view suffers seriously from an insufficient understanding of Leibnizian architectonics, although it has to be noted that Rescher does not discuss it sufficiently either. However, the nature of laws is a much more prominent element in Blumenfeld's than in Rescher's view interpretation. It is for this reason that I find Rescher's trade-off view a better interpretation of God's preferred way of choosing between possible worlds. I will now compare the trade-off view with the maximum theory presented by Donald Rutherford.

2. 4. 2. Architectonics and the Principle of Optimal Order in Tentamen Anagogium

It is clear that Rutherford considers the nature of order important, for he connects it with the maximisation of essence and rejects the simplicity/variety criterion as the most significant in the best world. He does not believe that Rescher is able to give sufficient grounds for preferring optimisation formula to the maximisation formula, and sets out to show that for Leibniz the creation was a *summum bonum* theory that encompassed all perfections. He also sees order (in the form of the principle of continuity) as a means to variety, although he does not believe that variety is literally produced according to the most simple laws. As discussed, it is

vital for his theory that the order of the world is optimal, otherwise the maximisation of perfection would simply fail.[109]

While I agree that the "simplicity" of laws should not be understood literally, I still think that Leibniz generally used the dichotomy between simple laws and the richness of phenomena to describe the structure of the best world. These two criteria occur in various forms in many of his writings, and almost always together, as a pair.[110] On the other hand, he used the principle of continuity in the sense of a "principle of general order" on only one occasion as far as I know, and that was in the context of his critique of Malebranche's view of natural laws.[111] He discussed it more frequently as a principle of nature that could be interpreted to refer to general perfection or harmony, as Gregory Brown has argued.[112]

The principle of continuity is usually employed in testing hypotheses in natural science. A representative example is to be found in *Animadversiones in partem generalem Principiorum Cartesianorum* (1692), art. 53, in which Leibniz used it in refuting the Cartesian laws of motion, arguing that the movement resulting from them formed an erratic figure and not a continuous line.[113]

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[109] Rutherford, *Leibniz and the Rational Order of Nature*, pp. 46-47.

[110] See G IV, p. 43 and G VI, p. 238 & p. 603.

[111] See G III, p. 51.

[112] See Brown, *Leibniz's Theodicy and the Confluence of Worldly Goods*, p. 462. Both Brown and Rutherford cite Leibniz's letter to De Volder 24. 3./3. 4. 1699: "Hoc non fieri docet experientia, sed idem comprobat ratio ordinis quae efficit ut quanto res discutiuntur magis, tanto magis intellectui satisfiat…" G II, p. 168. Thus Leibniz combined the principle of continuity with the intellectual satisfaction received by examining nature. While Rutherford considers this to support his theory that the principle of continuity is the principle of order in the real world, I agree with Brown and see it as referring to perfection or harmony in general. In my view, this passage could arguably be seen as referring to the wonders of nature that exemplify God's wisdom, although the context is related to continuous creation.

[113] "Ex Cartesianis vero regulis non posset duci continua quaedam linea eventuum variatorum respondes lineae continuae hypotheseos variantis, et prodiret delineatio plane monstrosa et contraria nostro Criterio artic. 45 seu Legi Continuitatis." G IV, p. 384. See also *Specimen dynamicum*, Part II.

He referred to it in *Tentamen anagogium*: "It serves not merely to test, however, but also as a very fruitful principle of discovery, as I plan to show some day."[114] Similarly, in DM, §6: "…let us assume…that someone jots down a number of points at random on a piece of paper, as do those who practice the ridiculous art of geomancy. I maintain that it is possible to find a geometric line whose notion is constant and uniform, following a certain rule, such that the line passes through all the points in the same order in which the hand jotted them down."[115]

While it is clear that the principle of continuity is observable in the actual world, I do not think there is a convincing reason to suppose that it gives rise to optimal order and is therefore the ruling principle of creation.[116] In my view this is evident in *Tentamen anagogium*, Leibniz's most complete text on architectonics. In the first paragraph of the memoir he argued in a manner that promises to clarify the issue: "I have shown on several occasions that the final analysis of the laws of nature leads us to

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On this theme, see Seager, *The Principle of Continuity and the Evaluation of Theories*.

[114] "…elle sert non seulement d'examen, mais encor d'un tres fecond principe d'invention, comme j'ay dessein de monstrer un jour." G VII, p. 279; L, p. 484. In a letter to Varignon on the subject of the infinitesimal calculus and its applications, Leibniz argued that when this universal idea is applied to physics and the laws of motion, it could be reduced in part to the law of continuity, which long served him as a principle of discovery in physics and also as a convenient test to see if certain rules were good. See GM IV, p. 106.

[115] "…supposons…que quelcun fasse quantité de points sur le papier à tout hazard, comme font ceux qui exercent l'art ridicule de la Geomance. Je dis qu'il est possible de trouver une ligne geometrique dont la notion soit constante et uniforme suivant une certaine regle; en sorte que cette ligne passe par tous ces points, et dans le même ordre que la main les avoit marqués." A VI, 4, pp. 1537-38; AG, p. 39.

[116] According to François Duchesneau, Leibniz regarded the architectonic principles as presumptions. See Duchesneau, *Leibniz et la méthode de la science*, p. 261. For another kind of criticism concerning Rutherford's interpretation of the optimal order as the ruling principle in creation, see Brown, *Does the Best of All Possible Worlds Contain the (Absolute) Most*?, pp. 107-08.

the most sublime principles of order and perfection, which indicate that the universe is the effect of a universal intelligent power."[117]

He soons turned to the method of optimal forms, which provides a maximum or a minimum:

> "…the principle of perfection is not limited to the general but descends also to the particulars of things and of phenomena…in this respect it closely resembles the method of optimal forms, that is to say, of forms which provide a maximum or a minimum, as the case may be – a method which I have introduced into geometry in addition to the ancient method of maximal and minimal quantities. For in these forms or figures the optimum is found not only in the whole but also in each part, and it would not even suffice in the whole without this."[118]

As noted above, this optimal feature of each part of the world is an essential part of Rescher's interpretation. In this connection Leibniz referred to the brachistochrone problem thus: "It is in this way that the smallest parts of the universe are ruled in accordance with the order of greatest perfection; otherwise the whole would not be so ruled."[119] Judging by this passage, the optimal order is connected to the method of optimal forms, which again is connected to the minimum or maximum.

The determination between minimum or maximum is connected to final causes, the value of which Leibniz promised to

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[117] "J'ay marqué en plusieurs occasions que la derniere resolution des Loix de la Nature nous mene à des principes plus sublimes de l'ordre et de la perfection, qui marquent que l'univers es l'effect d'une puissance intelligente universelle." G VII, p. 270; L, p. 477.

[118] "…ce principe de la perfection au lieu de se borner seulement au general, descend aussi dans la particulier des choses et des phenomenes…qu'il en est à peu pres comme dans la Methode de Formis Optimis, c'est à dire maximum aut minimum praestantibus, que nous avons introduite dans la Geometrie au delà de l'ancienne methode de maximis et minimis quantitatibus. Car ce meilleur de ces formes ou figures ne s'y trouve pas seulement dans le tout, mais encor dans chaque partie, et même il ne seroit pas d'assez dans le tout sans cela." G VII, p. 272.

[119] "C'est ainsi que les moindres parties de l'univers sont reglées suivant l'ordre de la plus grande perfection; autrement le tout ne le seroit pas." G VII, pp. 272-73; L, p. 478.

show in the future in "a general principle of optics that a ray of light moves from one point to another along the path found to be easiest in relation to the plane surfaces that must serve as the rule for other surfaces."[120]

Leibniz was referring to Fermat's law of refraction, according to which light always travels the path that requires the least time, and argued that another principle was even more important, according to which "in the absence of a minimum it is necessary to hold to the most determined, which can be the simplest even when it is a maximum."[121] This is clearly a reference to laws that are most determined, as understood by Rutherford, to give rise to optimal order. At the same time it refers to optimisation between minima or maxima, which is clear from Leibniz's optical example following the above passage.[122]

Leibniz began by criticising Descartes, who tried to explain the law of refraction in terms of efficient causes or the composition of directions in imitation of the reflection of bullets, and then proceeded to explain "how it remains always universally true that the ray is directed in the most determined or unique path."[123]

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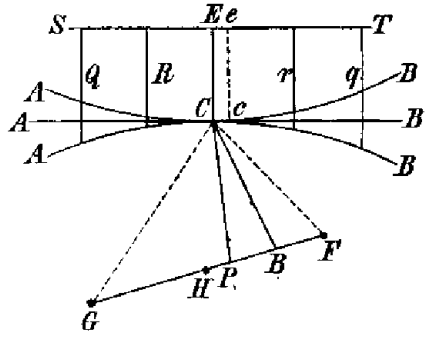
[120] "…je proposay le principe general d'optique, que le rayon se conduit d'un point à l'autre par la voye qui se trouve la plus aisée, à l'egard des superficies planes, qui doivent servir de regle aux autres." G VII, p. 273; L, p. 479.

[121] "…qu'au defaut du moindre, il faut se tenir au plus determiné, qui pourra estre le plus simple, lors même qu'il est le plus grand." G VII, p. 274; L, p. 479.

[122] For additional texts on optics by Leibniz, see Ger, p. 37-108.

[123] "…j'expliqueray maintenant comment il demeure tousjours generalement vray, que le rayon se conduit par le chemin le plus determiné ou unique…" On criticism of Descartes' optics, see also *Carteesi explicatio Refractionis*, Ger, pp. 57-67.



He continued, referring to the above figure: "For given a curve *AB*, concave or convex, and an axis *ST* to which the ordinates of the curve are referred; then it is seen that to each ordinate, such as *Q* or *R*, there corresponds another one equal to it, its twin, *q* or *r*. But there is one particular ordinate, *EC*, which is unique, or the only determinate one of its magnitude, and has no twin, since the two twins *EC* and *ec* coincide in it and make but one. And this *EC* is the greatest ordinate of the concave curve and the smallest of the convex curve."[124] Thus there is one unique path, the path of the light ray, which can be found by combining the minimum or the maximum. For this reason this unique path is the most determined.

Although the analysis had its predecessors in Fermat and Snell, Leibniz was the first to seek to systematise the idea in optics and apply it to metaphysics. He appeared to think that in a metaphysically perfect world the physical system was also perfect,

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[124] "…soit une courbe AB concave ou convexe, et un Axe ST, dont on mene les ordonnées à la courbe, on voit qu'à l'ordonnée comme Q ou R repond une autre, qui luy est egale, et comme sa jumelle q ou r. Mais il y a les cas d'une ordonnée singuliere EC, qui est la seule determinée ou unique de sa grandeur, et n'a point de jumelle, puisque ces deux jumelles EC et ec s'y reunissent et ne font qu'une, et cette EC est la plus grande ordonnée sur la courbe concave, et la plus petite ordonnée sur la courbe convexe." G VII, p. 275; L, p. 480. The figure is from G VII, p. 275.

and this was why the ray of light always found the optimal path. This fact also proved that this was the best of all possible worlds.

From the context in *Tentamen* it is clear that Leibniz thought that the optical example can be used to exemplify natural laws in general of the best possible world. The determination between minimum (laws) or maximum (phenomena) produces the unique solution which is the optimal or best world. At the end of *Tentamen* Leibniz wrote:

> "This principle of nature, that it acts in the most determined ways in which we may use, is purely architectonic in fact, yet it never fails to be observed…Geometric determinations introduce absolute necessity, the contrary of which implies a contradiction, but architectonic determinations introduce only a necessity of choice, the contrary of which means imperfection."[125]

What is a architectonically the best world provides a hypothetically necessary choice for God: Since the best world is uniquely the best, he cannot fail to recognize this but He is not necessitated to choose it, as discussed earlier in Chapter 1. This is an indirect way of saying that what is architectonically the best world is also best in every respect since otherwise it would not incline God's will. Thus it includes perfections such as universal observability, goodness and beauty.[126]

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[125] "Ce principe de la nature d'agir par les voyes les plus determinées que nous venons d'employer, n'est qu'architectonique en effect, cependant elle ne manque jamais de l'observer…Les determinations Geometriques importent une necessité absolue, dont le contraire implique contradiction, mais les Architectoniques n'importent qu'une necessité de choix, dont le contraire importe imperfection." G VII, p. 278; L, p. 484.

[126] Leibniz connected God's wisdom or the principal of fitness (choice of wisdom) to final causes and architectonics thus: "So there is even in the algebraic calculus what I call the law of justice, which greatly aids us in finding good solutions." He formulated the law of justice as follows: "Things which are contrary to moral principles, we ought also to believe we are unable to do." L, p. 485, n. 13. On the principle of fitness, see PNG, §11. On the relationship between final causes and moral laws, see PNG, §3.

What did Leibniz have to say about the law of continuity? He addresses it at the very end of the memoir claiming that the laws of motion could not be explained without architectonic grounds. Of crucial importance in this respect was the law of continuity, not only in terms of testing theories, but also as a fruitful principle of discovery. It could thus be classed as an architectonic principle that was useful in testing and finding theories. Nowhere in *Tentamen*, however, did he mention it as contributing to optimal order or as a main principle of general order.

On the contrary, he added: "I have also found other very beautiful and extended laws of nature, quite different, however, from those usually employed, yet always depending on architectonic principles."[127] It remains unclear to what he was referring here (one would guess he meant laws of dynamics), but it would seem odd that the law of continuity was mentioned this briefly here if it were to be considered the main principle of creation.

In my view, a more promising approach to the principle of continuity in *Tentamen* is taken by Robert McRae in his book *Leibniz: Perception, Apperception, and Thought*: he regards the law of continuity as an architectonic principle that works in conjunction with the optimum principle, understood to be the easiest or most determined action.[128] The most determined action presupposes continuity, and at the same time continuity requires the most determined action.[129] He supports his view with a quotation from *Tentamen* relating to the general rule in optics*:*

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[127] "…j'ay trouvé encor d'autres Loix de la nature tres belles et tres etendues, et cependant fort differentes de celles qu'on a coustume d'employer et tousjours dependantes des Principes architectoniques." G VII, p. 279; L, 484.

[128] See McRae, *Leibniz: Perception, Apperception and Thought*, pp. 113-114. A similar view can be found in Duchesneau, *Leibniz et la méthode de la science*, p. 313 & 377.

[129] According to François Duchesneau, Leibniz often substitutes the expression "easiest" with "most determined" in his more technical writings. See Duchesneau, *Leibniz et la méthode de la science*, pp. 263-64.

> "Order demands that curved lines and surfaces be treated as composed of straight lines and planes, and a ray is determined by the plane on which it falls, which is considered as forming the curved surface at that point. But the same order demands that the effect of the greatest ease be obtained in relation to the planes, at least those serving as elements to other surfaces, since it cannot also be obtained with regard to these surfaces."[130]

Leibniz was apparently suggesting here that there could not be an optimum without continuity, nor continuity without an optimum. I think it could be said that, although the context in *Tentamen* implies that there are still more architectonic principles besides the optimum principle and the principle of continuity, these two are explicitly mentioned and for this reason it is reasonable to assume that they are the most important.

It seems to me that this is an adequate interpretation of the architectonics in *Tentamen*. There are also other passages in Leibniz's works that support this view. Take DM, §6, for example: "…God has chosen the most perfect world, the one that is at the same time the simplest in hypotheses and the richest in phenomena, as might be a line in geometry the construction of which is easy and its properties and effects are wonderful and widespread."[131] When the line is the most determined ("the construction is easy") and at the same time covers a continuous variety of accidents ("the effects are wonderful and widespread"), it is at its most perfect. The most determined construction needs continuity, and because the line is the most determined, the

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[130] "L'ordre veut que les lignes et surfaces courbes soyent traitées comme composées de droites et de plans. Et un rayon est determiné par ce plan, où il tombe, qu'on considere comme y formant la surface courbe. Mais le même ordre veut, que l'effect de la plus grande facilité soit obtenu dans les plans au moins qui servent d'elemens aux autres surfaces, ne pouvant pas estre obtenu à l'egard d'elles aussi." G VII, p. 274.

[131] "…Dieu a choisi celuy qui est le plus parfait, c'est-à-dire celuy qui est en même temps le plus simple en hypotheses et le plus riche en phenomenes: comme pourroit estre une ligne de Geometrie dont la construction seroit aisée et les proprietés et effects seroient fort admirables et d'une grande étendue." A VI, 4, p. 1538; AG, p. 39

condition is satisfied.[132] This does not imply, however, that the maximum amount of substances is required.

According to this reading, order requires determination between simple laws and varieties of phenomena. As mentioned, Rutherford rejects the dichotomy between order and variety, and concentrates on optimal order. In my view, the above discussion shows that Leibniz's architectonics was a more complex system of different architectonic laws that contributed to both order and variety. Therefore I have to conclude that Rutherford's understanding of architectonics is also deficient.[133]

An optimum between minima or maxima could also be seen as a law of continuous series, as George Gale has suggested.[134] In the case of the best possible world, each substance or individual notion follows a continuous law of the series (or "programme"), and the whole could also be seen as following a law of the series (which consists of all its laws of the series).[135] In this sense, the following extract (cited by Rutherford) from a letter to Varignon (1702) could be considered to support this view:

> "Therefore I think I have good reasons for believing that all the different classes of beings whose assemblage forms the universe are, in the ideas of God who knows distinctly their essential gradations, only like so many coordinates of the same curve."[136]

The implication here is that the principle of continuity is necessarily observed in the optimum since God, when

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[132] See also Belaval, *Leibniz critique de Descartes*, p. 410 and *Essais de Theodicée*, §213. The idea here is related to the brachystochrone solution.

[133] For Rutherford's views on architectonics, see Rutherford, *Leibniz and the Rational Order of Nature*, pp. 28-29.

[134] Gale, *Leibniz On Metaphysical Perfection, Physical Optimality, And Method in Physics; or, a Real Tour De Force*, p. [8]. See also Rescher, *Leibniz. An Introduction to his Philosophy*, p. 16.

[135] In a letter to Des Bosses Leibniz notes: "Meo judicio, nisi daretur series optima, nihil plane crearet Deus quia non potest agere praeter rationem, aut praeferre minus perfectum alteri perfectiori." G II, p. 424. On Leibniz's conception of Law-of-the-series, see Cover and O'Leary-Hawthorne, *Substance and Individuation in Leibniz*, ch. 6.

[136] Leibniz, *Selections*, pp. 186-87.

contemplating the creation saw the whole law of the series that contained all the successive states of the substances. The brachistochrone solution is linked to this theme in the following passage (cited by Blumenfeld): "Just as there is no line freely drawn by hand, however irregular it may seem, which cannot be reduced to a rule or definition, likewise the whole series of God's actions makes up a certain entirely regular disposition without any exception. And … it is the most perfect one possible or the simplest, just as of all the lines that can pass through the same points, one is the simplest."[137]

However, one is entitled to ask why, if the best world is created by determination between maximum or minimum, there are supposedly no gaps in the succession of substances? An obvious answer lies in the brachistochrone solution itself, an important feature of which is the fact that each portion of the optimal path is also the fastest route between the two given points. Thus each part of the universe is as optimal and continuous as the whole.

In the light of this hypothesis, analysis of any part of the universe reveals that the principle of continuity and the determination between order or variety are observed in the creation, and once we know this we can expect to find these features in natural laws.[138] As a keen follower of experiments carried out under the microscope, Leibniz could find perfection and harmony in the smallest parts of the universe:

> "We also find order and wonders in the smallest whole things when we are capable of distinguishing their parts and at the same time of seeing the whole, as we do in looking at insects and other small things under the microscope. There are thus the strongest reasons for holding

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[137] Blumenfeld, *Perfection and Happiness in the best possible world*, pp. 387-88. See also *Discours de metaphysique*, §21. Yvon Belaval argued that architectonic laws are most productive because the same operation produces a maximum or a minimum, but never an indeterminate result. Belaval, *Leibniz critique de Descartes*, p. 410.

[138] See *Tentamen Anagogium*, G VII, p. 272 and *Essais de Theodicée*, §212. This principle is also popular in physics today. For a discussion of its modern applications, see Gale, *Leibniz On Metaphysical Perfection, Physical Optimality, And Method in Physics; or, a Real Tour De Force*, p. [18-]

> that the same craftsmanship and harmony would be found in great things if we were capable of seeing them as a whole."[139]

Rescher also suggests another kind of answer: all possible worlds are maximal in the sense that they are infinite and continuous. There cannot be a possible world that contains only a finite number of beings. Each one is, to use his term, saturated: once a possible world is constituted in conception, there is never any possibility of adding further possible substances to its content.[140]

I am inclined to accept both of these answers. It seems natural that the optimum has to include continuity between the states of the substances, since in the opposite case it would be difficult to believe that the best world was perfect in terms not only of the whole, but also of the parts. It would also seem implausible that Leibniz thought God to consider finite sets of beings in his deliberation – if we think of the concept "world", it seems self-evident that we should think of an infinite collection of substances.

Gregory Brown describes an interesting thought experiment on this subject: suppose we remove one single monad from the real world while our perceptions of the other monads remain the same. It seems likely that this world, given the infinity of monads in it would not lose its spatiotemporal framework or suffer from less variety in its phenomena. This may violate the principle of continuity, but it does not seem to affect the character of the laws of the best possible world in the sense that they are less simple than they would be if no monads were removed.[141] This argument appears to me to be valid. Since the best world consists of optimal

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[139] "Aussi trouvons-nous l'ordre et le merveilleux dans les moindres choses entieres, lorsque nous sommes capables de distinguer en meme temps les parties, et d'en visager le tout, comme il paroist en regardent les insectes et autres petites choses par le microscope. Donc par plus forte raison l'artifice et l'harmonie se trouveroit dans les grandes choses, si nous estions capables de les envisages entieres." M, p. 64; L, p. 565. See also *Dioptrica*, Ger, pp. 98-102.

[140] Rescher, *On Leibniz*, p. 7.

[141] See Brown, *Does the Best of All Possible Worlds Contain the (Absolute) Most?*, p. 108-10.

forms, removing one substance would not cause a collapse in its structure.

2. 4. 3. The Tiling Problem in De rerum originatione radicali

Donald Rutherford sees the creation as a simple engineering problem, involving the filling in of a given space in the most effective way.[142] He refers to Leibniz's basic metaphysical text *De rerum originatione radicali* (1696), in which he likened the creation to a tiling problem, requiring the board (of a game) to be filled in accordance with certain rules. However, in my view the solution presented in the memoir is, in fact, far more sophisticated than Rutherford holds. Leibniz started his memoir by emphasising the importance of essence:

> "…it is obvious that of the infinite combinations of possibilities and possible series, the one that exists is the one through which the most essence or possibility is brought into existence."[143]

He continued directly by suggesting a method for finding this best alternative:

> "In practical affairs one always follows the decision rule in accordance with which one ought to seek the maximum or the minimum; namely, one prefers the maximum effect at the minimum cost, so to speak. And in this context time, place, or in a word the receptivity or capacity of the world, could be taken for the cost of the plot of ground on which the most pleasing building possible is to be built…the situation is like that in certain games, in which all places on the board are supposed to be filled in accordance with certain rules, where at the end, blocked by

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[142] Rutherford, *Leibniz and the Rational Order of Nature*, p. 26.

[143] "Hinc vero manifestissime intelligitur ex infinitis possibilium combinationibus seriebusque possibilibus existere eam, per quam plurimum essentiae seu possibilitas perducitur ad existendum." G VII, p. 303; AG, p. 150.

> certain spaces, you will be forced to leave more places empty than you could have or wanted to."[144]

In Rutherford's view the board is filled according to the principle of continuity which leaves no empty places or gaps.[145] Disagreeing with Rescher, he argues that the citation shows that variety and order are not competing factors in the design of the world, and that God's choice of the optimal world presupposes order that "enables the coexistence of the greatest possible variety of being within the confines of a single world."[146] However, Leibniz was explicitly connecting the filling of the world to the determination between maximum or minimum, and considered space and time to be a result of it.[147] In fact, he believed this determination, by means of divine mathematics, *was* the decision rule employed by God, as the following passage clearly shows:

> "There is, however, a certain procedure through which one can most easily fill the board. Thus, if, for example, we suppose that we are directed to construct a triangle, without being given any other directions, the result is that an equilateral triangle would be drawn; and if we suppose that we are to go from one point to another, without being directed to use a particular path, the path chosen will be the easiest or the shortest one…it follows that there would be as much as there possibly can be, given the capacity of time and space (in other words, the capacity of the order of possible existence); in a word, it is just like tiles laid down so as to contain as many as possible in a given area. From this we can already understand in a wondrous way how a

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144 "Semper scilicet est in rebus principium determinationis quod a Maximo Minimove petendum est, ut nempe maximus praestetur effectus, minimo ut sic dicam sumtu. Et hoc loco tempus, locus, aut ut verbo dicam, receptivitas vel capacitas mundi haberi potest pro sumtu sive terreno, in quo quam commodissime est aedificandum…sese res habet ut in ludis quibusdam, cum loca omnia in Tabula sunt replenda secundum certas leges, ubi nisi artificio quodam utare, postremo spatiis exclusus iniquis, plura cogeris loca relinquere vacua, quam poteras vel volebas." G VII, pp. 303-304; AG 150.

145 See also DM, §5.

146 Rutherford, *Leibniz and the Rational Order of Nature*, p. 26.

147 The determination principle is also discussed in other contexts in *Essais de Theodicée*, § 212-213 and *Nouveaux Essais* IV, vii, §15.

> certain divine Mathematics or Metaphysical Mechanism is used in the very origination of things, and how the determination of the maximum finds a place."[148]

Here Leibniz was referring explicitly to the brachistochrone problem, maintaining that the decision rule leads to the optimum.[149] Once this had been found, the world is filled as effectively as possible. Thus the "determination of the maximum" is relative to the optimal rule. From the optimum it follows that a continuous series of substances is created and the quantity of essence or reality is maximised. The equilateral triangle is an example of such a substance in that it represents the optimal forms through which the best world is its most harmonious. In my view, it is in this sense that the passage from a letter sent to Malebranche on June 22, 1679, quoted by Blumenfeld, could be understood:

> "We also have to say that God makes the maximum of things he can, and what obligates him to seek simple laws is precisely the necessity of finding room for as many things as can be put together: if he made use of other laws, it would be like trying to make us lose more space than they occupy."[150]

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[148] "Certa autem ratio est per quam repletio maxima facillime obtinetur. Uti ergo si ponamus decretum esse ut fiat triangulum, nulla licet alia accidenti determinandi ratione, consequens est, aequilaterum prodire; et posito tendendum esse a puncto ad punctum, licet nihil ultra iter determinat, via eligetur maxime facilis seu brevissima; ita posito semel ens praevalere non-enti, seu rationem esse eur aliquid potius extiterit quam nihil, sive a possibilitate transeundum esse ad actum, hinc, etsi nihil ultra determinetur consequens est, existere quantum plurimum potest pro temporis locique (seu ordinis possibilis existendi) capacitate, prorsus quemadmodum ita componuntur tessellae ut in proposita area quam plurimae capiantur." G VII, p. 304; AG 150-51.

[149] Both *Tentamen* and *De rerum* were written around the same time as the famous competition for the solving of the Brachystochrone problem was proclaimed (Leibniz's solution to Bernouilli is dated 16. 7. 1696). See Kline, *Mathematical Thought From Ancient To Modern Times*, p. 575

[150] "Il faut dire aussi que Dieu fait le plus de choses qu'il peut, et ce qui l'oblige à chercher de loix simples, c'est à fin de trouver place pour tout autant de choses qu'il est possible de placer ensemble; et s'il se servoit

This reading is also supported in the following passage from *Essais de Theodicée*, §208:

> "One may, indeed, reduce these two conditions, simplicity and productivity, to a single advantage which is to produce as much perfection as is possible: thus Father Malebranche's system in this point amounts to the same as mine. Even if the effect were assumed to be greater, but the process less simple, I think one might say that, when all is weighed and counted, the effect itself would be less great, taking into account not only the final effect but also the mediate effect."[151]

The single advantage mentioned here is the determination between minimum or maximum, which produces a unique optimum resulting in the highest degree of perfection.

In sum, I find Rutherford's interpretation problematic although it is possible. Two of Leibniz's important metaphysical texts, *Tentamen anagogium* and *De rerum originatione radicali*, consistently referred to the determination between minimum or maximum as the central principle of nature. As I have argued, the principle of continuity is secondary to this in the plan for the best world. Leibniz's architectonics requires the combination of all of these different laws and one can hardly single out just one of them, such as the principle of continuity, and hold it to be the principal rule of creation.

Although Leibniz often compared God with an architect, a housekeeper, an engineer and even a sculptor,[152] I am still inclined to agree with Rescher and Gale in considering the creation of the

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d'autres loix, ce seroit comme si on vouloit employer des pierres rondes dans un batiment, qui nous ostent plus d'espace qu'elles n'occupent." G I, p. 331; L, p. 211.

[151] "On peut même reduire ces deux conditions, la simplicité et la fecondité, à un seul avantage, qui est de produire le plus de perfection qu'il est possible; et par ce moyen, le systeme du R. P. de Mallebranche en cela se reduit au mien. Car si l'effect étoit supposé plus grand, mais les voyes moins simples, je crois qu'on pourroit dire, que tout pesé et tout compté, l'effect luy même seroit moins grand, en estimant non seulement l'effect final, mais aussi l'effect moyen." G VI, p. 241; H, p. 257.

[152] See *Essais de Theodicée*, §130.

world more as mathematical problem solving than anything else.[153] Finding the optimal combination of order and variety in infinite compossible sets of substances by comparing them with each other offers even more convincing proof of the supreme wisdom than filling the universe according to the requirements of optimal order.[154]

My preference is thus for the trade-off-view, according to which, of the possible worlds God chooses the one that is optimal and has the highest degree of perfection. Since he chooses between infinite continuous and compossible wholes, the best world necessarily consists of an infinite number of beings and has the highest degree of perfection.

In this reading the quantity of essence refers not to the maximum number of beings (which is the foundation of the maximisation-view), but to the degree of perfection. Although Leibniz did not make this connection entirely clear, I think it is implied in *De rerum*, quoted above. In this respect I agree with another influential theorist advocating the trade-off view, Gregory Brown, who argues that "the two notions of perfection, viz. simplicity of laws in conjunction with richness of phenomena, on the one hand, and quantity or degree of essence [of harmonious properties], on the other, are not in conflict, but come indeed to the same thing."[155]

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[153] See, for example G VII, p. 304 and G VI, p. 107. Leibniz wrote to a margin of a short fragment *Dialogus* (1677) the phrase "Cum DEUS calculat et cogitationem exercet, fit mundus." See G VII, p. 191. In a letter to Sophie in 1696 he wrote: "…Il est bon de considerer que l'ordre et l'harmonie sont aussi quelque chose de mathematique, qui consiste en certaines proportions." Gr, p. 379 (cited in Heinekamp, *Das Problem des Guten bei Leibniz*, p. 179). In GM II, p. 258 He wrote: "Ma metaphysique est toute mathematique pour ainsi dire ou la pourroit devenir."

[154] See Gale, *On What God Chose*, p. 81.

[155] Brown, *Compossibility, Harmony, and Perfection in Leibniz*, pp. 277-78. See also Gale, *On What God Chose*, pp. 78-79. The following passage seems to support this view: "…ut possibilitas est principium Essentiae, ita perfectio seu Essentiae gradus (per quem plurima sunt compossibilia) principium existentiae." (*De rerum originatione radicali*) G VII, p. 304. See also *Essais de Theodicée*, §208.

2. 5. Moral Goodness in God's Choice

So far, I have focused mainly on the metaphysical criteria of God's choice, but it is also important to consider the significance of moral goodness in the best of all possible worlds. Leibniz distinguished three kinds of goodness in *Essais de Theodicée*, §209:

> "…perfection includes not only the moral good and the physical good of intelligent creatures, but also the good which is purely metaphysical, and also concerns creatures devoid of reason."[156]

Thus the best world, which has the highest degree of perfection, should also be metaphysically good, and this involves all substances. Furthermore, metaphysical goodness or perfection itself includes both moral and physical goodness, and it is sometimes even necessary to admit physical and moral evil.[157] Perfection is also defined as positive reality in *La Monadologie*, §41 (1714). The amount of reality or essence is inextricably intertwined with metaphysical considerations - when the best world is taken as a whole, the amount of essence represents its metaphysical goodness, which is greatest in the best possible world. As mentioned, I agree with Gregory Brown that the highest degree of perfection and the greatest amount of essence are, in fact, equivalent notions.[158]

I will now turn to the role of moral goodness in God's choice. Leibniz stated in many connections that the best world should contain moral goodness or happiness which is related to wisdom and virtue.[159] One example is in PNG, §15:

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[156] "…la perfection comprend non seulement le bien moral et le bien physique des Creatures intelligentes, mais encor le bien qui n'est que metaphysique, et qui regarde aussi les creatures destituées de raison." G VI, p. 242; H, p. 258.

[157] G VI, p. 242.

[158] "…Dieu est la cause de toutes les perfections, et par consequent de toutes les realités, lorsqu'on les considere comme purement positives." (*Essais de Theodicée, Abregé de la Controverse reduite à des Arguments en forme*) G VI, p. 383.

[159] I will discuss these connections in Chapter 9.

> "…all minds, whether of men or genies, entering into a kind of society with God by virtue of reason and eternal truths, are members of the City of God, in other words, members of the perfect state, formed and governed by the greatest and best of monarchs. Here there is no crime without punishment, no good action without proportionate reward, and finally, as much virtue and happiness as is possible.[160]

The principal reason for human happiness is joy, which follows from perceiving perfection or harmonious properties of the world, and the source of harmony is God. Thus metaphysical goodness is the foundation of human happiness.[161]

This additional feature of the best possible world poses further challenges to the three interpretations discussed above. If the best world is to satisfy the condition of providing happiness for spirits, how can this be reconciled with its metaphysical criteria? Does metaphysical perfection entail moral goodness?

As mentioned, these interpretations differ in this regard. Whereas Rescher sees moral goodness as a by-product of the optimisation between variety and order, Blumenfeld and Rutherford relate it to the maximal number of best spirits in the world. I will first look at their views in detail and then examine some of Leibniz's discussions on the topic.

Nicholas Rescher attributes the least importance to moral goodness in God's decision. He argues that Leibniz made it clear that metaphysical considerations were more important than moral ones, concluding that this should be understood as Leibniz's mature position on the matter even if it clearly represented a

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[160] "…tous les esprits, soit des hommes, soit des genies, entrant en vertu de la Raison et des Verités éternelles sans une espèce de Societé avec Dieu, sont des membres de la Cité de Dieu, c'es à dire, du plus parfait état, formé et gouverné par le plus grand et le meilleur des Monarques: où il n'y a point de crime sans chatiment; point de bonnes actions sans recompense proportionnée, et enfin autant de vertu et de bonheur qu'il est possible." G VI, p. 605; AG, p. 212.

[161] I will return to this topic in Chapter 9.2.

tension in his philosophy.[162] In his latest presentation of his views, "Leibniz on possible worlds", he refers to *Essais de Theodicée*, §8:

> "…[a]s in mathematics, when there is no maximum nor minimum, in short nothing distinguished, everything is done equally, or when that is not possible, nothing is done: so it may be said likewise in respect of perfect wisdom, which is no less orderly than mathematics, that if there were not the best [*optimum*] among all possible worlds, God would not have produced any."[163]

When God chooses to create an optimum, the unique alternative among all possible worlds is the best choice in every respect, including that of moral goodness. Thus moral (and physical) goodness follows from metaphysical goodness. The existence of this real world proves that it is the best since otherwise God would not necessarily have created anything. It is beyond our cognitive abilities to know this absolutely, but we can conclude it from God's nature.[164] As discussed in the previous chapter, God is hypothetically necessitated to choose the best world because it appeals to His infinite goodness.

According to Rescher, an overtly complex world that has less order is too difficult to grasp and far too confusing for a finite mind. In contrast, a world with a minimum amount of variety and maximal order offers too little challenge for intelligent creatures. A metaphysically good world affords a comfortable environment for intelligent beings.[165] The comprehensibility of the best world also gives rise to happiness in it. The optimal world is perfect on each

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[162] Rescher, *Logical Difficulties in Leibniz's Metaphysics*, p. 184. Rescher refers to *Abregé de la Controverse reduite à des Argumens en forme* (An appendix to *Essais de Theodicée*), II. Objection. G VI, pp. 377-79

[163] "…comme dans les Mathematiques, quand il n'y a point de maximum ny de minimum, rien enfin de distingué, tout se fait egalement; ou quand cela ne se peut, il ne se fait rien du tout: on peut dire de même en matiere de parfaite sagesse, qui n'est pas moins reglée que les Mathematiques, que s'il n' y avoit pas le meilleur (optimum) parmy touse les mondes possibles, Dieu n'en auroit produit aucun." G VI, p. 107; H, p. 128.

[164] Rescher, *On Leibniz*, p. 37. See also DM, §31 and *Essais de Theodicée*, §10.

[165] Ibid., pp. 58-59.

level of existence, and this is why perceiving this whole creates happiness in us.[166]

David Blumenfeld argues that happiness is an essential feature of the best world. In fact, it has to be at its maximum, since Leibniz frequently stated that the happiness of human spirits is of utmost importance to God.[167] Thus, arguing against Rescher Blumenfeld holds that Leibniz was both an ontological and a moral optimist. He explains the relationship between perfection or harmony in the world and happiness as follows: since happiness is the human spirit's awareness of harmony, the world with the most harmony offers the greatest potential for happiness. From this it could be concluded that the world with the greatest perfection also contains the largest number of the best human spirits, which are compossible with one another since this gives rise to maximal harmony. Consequently, the world with the greatest harmony will also contain the greatest possible happiness.[168]

Donald Rutherford follows Blumenfeld in arguing that, as well as maximising metaphysical goodness or perfection, God intends to produce as much harmony as possible in the universe. However, he differs from Rescher and Blumenfeld in his view that perfection is not to be identified with harmony (variety in identity), but should be understood as the maximisation of metaphysical goodness. He argues that the following, often quoted passage from Leibniz's letter to Wolff is not to be understood literally:

> "Perfection is the harmony of things, or the state where everything is worthy of being observed, in other words, the state of agreement or

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[166] See DM, §36.

[167] Leibniz's views changed later and in *Essais de Theodicée* he clearly gave up this idea. However, Blumenfeld argues that his later position was compatible with his earlier views. Blumenfeld, *Perfection and Happiness in the Best World*, p. 404.

[168] Ibid., pp. 400-402.

> identity in variety; you can even say that it is the degree of contemplability."[169]

According to Rutherford, "although the harmony of a being (or better, the harmony of the law-like effects that follow from it) may be directly correlated with its degree of perfection (the degree of perfection of a being is the ratio between distinct and confused perceptions), it would be going too far to see Leibniz as identifying these concepts."[170] The reason for this is that harmony does not limit itself to the whole; it reaches to all levels of existence. Therefore, God realises not only the greatest variety of degrees of perfection, but also as much "ornament" as possible in the phenomena perceived by these beings.

Rutherford understands "ornament" here as the multiplicity of perceptions produced by substances representing each other. Therefore the harmony in the best world arises as a result of the mutual expression of substances. Harmony is, in fact, a precondition of perfection, since only under the condition of maximum harmony can as much perfection as possible be realised among enlightened minds.[171]

There is no tension between ontological and moral perfection in Rutherford's interpretation – the latter arises from the former. Like Blumenfeld, he argues that in order to create the greatest total perfection, God creates a maximal collection of minds with the greatest potential for happiness and virtue. This selection requires a world with the most harmony because otherwise the potential in its substances would be wasted. Since these best souls require perfection in order to gain happiness, it becomes evident that for the world to be the best, there cannot be the one without the other. The happiness of human spirits contributes to the perfection of the world, and is based on their perceiving it.[172]

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[169] "Perfectio est harmonia rerum, vel observabilitas universalium, seu consensus vel identitas in varietate; posses etiam dicere esse gradum considerabilitatis." GW, p. 172; AG, pp. 233-34.
[170] Rutherford, *Leibniz and the Rational Order of Nature*, p. 35. For a contrary view, see Brown, *Compossibility, Harmony, and Perfection in Leibniz*.
[171] Rutherford, *Leibniz and the Rational Order of Nature*, pp. 32-35.
[172] Ibid., pp. 48-51.

Arguing against Blumenfeld, Rutherford holds that God could not maintain the ratio of distinct perceptions to confused ones as His sole criterion for choosing a collection of substances, but had to take into account the interconnectedness or harmony of a possible world and choose the one containing the most perfection as a whole. Thus the best world is not a simple collection of best minds, but has to include lower monads, given the requirements of compossibility.[173] The guiding principle in His work is the law of continuity, which allows no gaps in the hierarchy of monads and takes care that all degrees of perfection are occupied.[174] Thus the result is a world with maximum perfection (goodness), variety of phenomena and monadic harmony (including happiness).[175]

2. 5. 1. Optimising and Moral Goodness

As I have indicated, I prefer the trade-off-view of Rescher and his supporters to Blumenfeld's and Rutherford's maximisation view with respect to God's criteria for His choice of the best world. The question of moral goodness, however, poses a challenge to the trade-off-view since Rescher clearly states that metaphysical considerations are more important than moral ones. How, then, can the trade-off-view explain the connection between metaphysical and moral perfection?

I will defend the trade-off-view by examining some texts on the subject and showing that, even if there is no conclusive evidence for this interpretation, the claim that moral goodness is a product of the optimising solution of God in the creation can be reasonably assumed. Of significance in this respect is *De rerum originatione radicali*, in which after presenting the idea of the best world as a result of the determination of minima or maxima Leibniz turned to moral goodness in it:

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[173] Ibid., pp. 180-81.

[174] There is one exception and this is the gap between animals and human spirits. Ibid., p. 165. For a different view, see Carlin, *Leibniz's Great Chain of Being*.

[175] Rutherford, *Leibniz and the Rational Order of Nature*, p. 200.

> "And lest anyone think that I am here confusing moral perfection or goodness with metaphysical perfection or greatness, and grant the latter while denying the former, one must realize that it follows from what I have said that not only is the world physically (or, if you prefer, metaphysically) most perfect, in other words that the series of things that has been brought forth is the one in which there is, in actuality, the greatest amount of reality, but it also follows that the world is morally most perfect, since moral perfection is in reality physical perfection with respect to minds. From this it follows that the world is not only the most admirable machine, but insofar as it is made up of minds, it is also the best republic, the republic through which minds derive the greatest possible happiness and joy, in which their physical perfection consists. "[176]

It is implied here that the metaphysically best world produces joy in its inhabitants, and this leads to the greatest conceivable happiness. Perceiving the inherent perfection of the best world is thus the key to moral goodness. This line of argument is represented by the trade-off view, provided that the reality or essence maximised is understood to be the highest degree of perfection. The same argument could also be applied to David Blumenfeld's interpretation if the "greatest amount of reality" is understood to be the greatest amount of existence or compossible substances.

Harmony is identified with perfection in both of these interpretations. Thus the happiness of spirits is founded on the perception of perfection in the best world, which gives rise to

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[176] "Et ne quis putet perfectionem moralem seu bonitatem cum metaphysica perfectione seu magnitudine hic confundi, et hac concessa illam neget, sciendum est, sequi ex dictis non tantum quod Mundus sit perfectissimus physice, vel si mavis metaphysice, seu quod ea series rerum prodierit, in qua quam plurimum realitatis actu praestatur, sed etiam quod sit perfectissimus moraliter, quia revera moralis perfectio ipsis mentibus physica est. Unde Mundus non tantum est Machina maxime admirabilis, sed etiam quatenus constat ex Mentibus, est optima Respublica, per quam Mentibus confertur quam plurimum felicitatis seu laetitiae, in qua physica earum perfectio consistit." G VII, p. 306; AG, pp. 152-53.

pleasure.[177] In other words, moral and physical goodness are founded on metaphysical goodness. I think this view is wholly consistent as long as harmony and perfection are identified. It would also imply that the best world enables a maximum of universal observation and the highest degree of thinkability in that these features are also based on harmony.[178]

Despite the differences concerning the trade-off character of the best world, Rescher would seem to agree with Blumenfeld's conclusion that the world with the greatest perfection and harmony will also contain the potential for the greatest possible happiness.[179] However, Blumenfeld's views are related to his problematic theory of the relationship between simple laws and the greatest number of phenomena, which I have already criticised.

According to Donald Rutherford, however, identifying the notions of perfection and harmony is almost certainly too simple in that harmony must reach multiple levels.[180] It thus requires more than perfection. He argues that in order for the world to be complete, representation between its substances is needed. The mirroring of substances of each other provides the ornament that makes up the full content of the best world. For this reason, a

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[177] I will discuss this in Chapter 9.1.

[178] See Brown, *Leibniz's Theodicy and the Confluence of Worldly Goods*, p. 468. Laurence Carlin quotes the following passage from *Elementa verae pietatis* (Gr, pp. 12-13) which seems to support this view: "The more relations there are in a thinkable object (the aggregate of which is harmony), this has more reality, or what is the same, there is perfection in the thought. Therefore, it follows that harmony is cogitability, and, of course, to the extent that there are cogitable things, perfection." Carlin, *On the Very Concept of Harmony in Leibniz*, p. 107. Another passage I think favours this view occurs in *Confessio philosophi*, where Leibniz's spokesman says: "[Harmonia] consistunt enim in ratione identitas ad diversitatem, est enim harmonia unitas in multis, maxima in plurimis; et in speciem turbatis et mirabili quadam ratione ex insperato ad summam concinnitatem reductis." A VI, 3, p. 122.

[179] Blumenfeld, *Perfection and Happiness in the Best World*, p. 402.

[180] Rutherford, *Leibniz and the Rational Order of Nature*, p. 32.

maximum amount of minds is needed from which results the maximal amount of harmony.

While this interpretation sounds valid in itself, the above citation seems to support a more simple system in which the best world gives its substances an optimal platform for the greatest possible amount of happiness. The representation of spirits is an essential feature of the best world, but I cannot see why this requires harmony to be distinguished from perfection. I think it is reasonable to assume (in the light of the passage from *De rerum*) that harmony reaches each level of existence precisely because it is identified with perfection, of which the best world has the highest degree. The perception of perfection gives rise to a harmonious feeling, which produces joy and eventually happiness in intelligent minds, as I will argue in Chapter 9.1. in this study.

Therefore I think the trade-off view captures well the above description from *De rerum*. The best world is the most harmonious and gives rise to the most observability and beauty because it has an optimal structure. This structure provides the highest possible degree of perfection on each level of existence, which gives rise to the most harmonious whole.[181]

There seems to be little textual evidence to support Rutherford's claims. There are a few passages in which Leibniz stated that harmony precedes perfection,[182] but he frequently identified them both explicitly, or argued that harmony is an effect of the creation (in which the highest degree of perfection was produced).[183]

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[181] In his commentary on *La Monadologie*, Rescher distinguishes the following levels of harmony, which he sees as having been produced by God's optimal choice: a) the voluntaristic harmony of mind-body interaction (of will and action); b) the cognitive harmony between perception and its focus (of thought and its object); c) The causal harmony between the order of efficient and final causation (of physical causality and of purpose) and d) The moral harmony of desert and reward (of nature and grace). Rescher, *G. W. Leibniz's Monadology*, p. 289.

[182] One possible canditate (which Rutherford does not mention) is *Essais de Theodicée*, §74, in which Leibniz stated that all that God does is harmonious to perfection. See G VI, p. 142.

[183] See G VII, 412; G VII, 74; GW, p. 172. See also Heinekamp, *Das Problem des Guten bei Leibniz*, pp. 166-67.

Furthermore, in my view, the "ornament" of the best world is the variety of phenomena realised in the creation in the sense Rescher refers to as completeness or fullness.[184] Variety (in conjunction with order) is a feature of the best world that God chose to create and it reaches all levels of existence. As mentioned, Leibniz argued that each part of the universe is optimal and therefore harmonious. The following extract from *Von der Weissheit* illustrates this interconnectedness of the features of the best world:

> "Now unity in plurality is nothing but harmony, and since any particular being agrees with one rather than another being, there flows from this harmony the order from which beauty arises, and beauty awakens love. Thus we see how happiness, pleasure, love, perfection, being, power, freedom, harmony, order, and beauty are all tied to each other, which is properly appreciated by few." [185]

The world is harmonious because it represents the highest degree of perfection.[186] In this respect I agree with Gregory Brown, who holds that harmony in a world increases as its perfection ratio increases, and decreases as its perfection ratio decreases.[187]

In sum, my specific purpose here has been to examine whether the trade-off view which I have preferred in other respects,

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[184] Rescher, *Leibniz's Metaphysics of Nature*, pp. 5-6.

[185] "Nun die einigheit in der vielheit ist nichts anders als die überinstimmung, und weil eines zu diesem näher stimmet als zu jenem, so sliesset daraus die odnung, von welcher alle schönheit hehrkomt, und die Schönheit erwecket liebe. Daraus siehet man nun, wie Glückseeligkeit, Lust, Liebe, Vollkommenheit, Wesen, Krafft, freiheit, überinstimmung, ordnung uns schönheit an einander verbunden, welches von wenigen recht angesehen wird." G VII, p. 87; L, p. 426.

[186] Perfection in this sense stems from *eudaimonia,* understood in Aristotle's second sense (the first sense being theoretical contemplation), as presented in *Nichomachean Ethics* X, 7: *eudaimonia* is connected to the whole of human capacities, which consist of both theoretical and practical reason. Thus *eudaimonia* or flourishing involves both reason and emotions as well as virtue. On Aristotle's *eudaimonia*, see Nagel, *Aristotle on Eudaimonia*. For a discussion of plural values, inspired by Aristotle, see Stocker, *Plural and Conflicting Values.*

[187] Brown, *Compossibility, Harmony, and Perfection in Leibniz*, p. 275.

survives the task of explaining the moral goodness of the best world. As the discussion above shows, I think this could be granted, even though Leibniz was not very clear in this matter and there is no conclusive textual support for this or the competing views. Nevertheless, I think it can reasonably be assumed from *De rerum* that Leibniz considered moral happiness to follow from metaphysical considerations.

2. 5. 2. Happiness in the Actual World

Leibniz clearly thought that there was most happiness in the best world. In the light of our everyday experiences, this claim seems patently absurd. The world is full of imperfection, unhappiness and suffering. How can this be if God is supposed to choose the best possible world, which includes the most moral goodness? I will conclude this discussion of God's rational choice by briefly considering Leibniz's defence of God's goodness (commonly known as the problem of Theodicy).

In his earlier philosophy Leibniz expressed the belief that the spirits were most important to God in His rational choice, a tone that is prominent in *Discours de metaphysique*, §35-36.[188] He argued that God loved the spirits like His children, whereas His relationship with other substances was more like that of a machine with its maker.[189] Nevertheless, in his later philosophy he saw the human happiness diminishing and other considerations increasing in importance.

A good example of this view occurs in the latter part of *De rerum originatione radicali.* After stating that the real world was morally the most perfect, he argues that our cognitive capacity is so limited that we understand only a small portion of the whole universe, and that the whole is even more harmonious when there is a certain amount of imperfection in it, just as the most sophisticated composers mix dissonance with consonance in their

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[188] On this theme, see Blumenfeld, *Perfection and Happiness in the Best Possible Worlds*, pp. 400-05.
[189] See, for example, *La Monadologie,* §64 and §90.

works.[190] He argues that "pleasure does not derive from uniformity, for uniformity brings forth disgust and makes us dull, not happy; this very principle is a law of delight."[191] Thus human happiness requires the interplay of various elements.

His most famous and extensive discussion of this matter is, of course, in *Essais de Theodicée*, in which he addresses the following questions. How it is possible that there is sin and evil in the world when God is supremely good by nature and He freely chooses the best of all possible worlds to create? Why are men not created as perfect? Why are there imperfect things and states in the best of all possible worlds?[192]

Leibniz approached this problem by showing that it was impossible for God to create a totally perfect world.[193] The creation

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[190] G VII, p. 306.

[191] "Haec ipsa est laetitiae lex, ut aequabili tenore voluptas non procedat, fastidium enim haec parit et stupentes facit, non gaudentes." G VII, p. 307; AG, p. 153.

[192] Malebranche's theodicy, presented earlier in *Traité de la nature et de la grâce* (1680) influenced Leibniz and his solution. While Malebranche's God acted for His own good and preferred values that were worthy of Him, Leibniz's God acts to produce the maximum amount of goodness possible, and this goodness is also an inherent feature of the world. According to Malebranche, the order of nature is determined by exceptionless laws that follow from general volitions of God. Creation itself, on the other hand, is determined by a particular volition of God (that is, the volition to create rather than not to create a world). Since the laws of nature, which are sometimes harmful to human beings and are the source of sin, are not a particular volition of God, He cannot be held directly responsible for the unfortunate occurences of evil in the world. If God were to change the general volitions (and natural laws), this world would no longer be worthy of His perfection. This solution was obviously not sufficient for Leibniz, who insisted that God knew that there were imperfections in the world and that He does his best to ease their effects. Rutherford, *Malebranche's Theodicy*, pp. 168-72. On the relationship between Malebranche's and Leibniz's views of theodicy, see Riley, *Leibniz's Universal Jurisprudence*, ch. 3.

[193] Leibniz also dissociated himself from two radical solutions that had been given earlier. The Averroists wanted to make God responsible for all man's actions and the Socianists denied God's ability to foresee things.

was the realisation of a thing in God's understanding and the evil lay in just this condition. The concept comprises a set of logically coherent entities, the inner properties of which are defined not by God Himself, but by their logical compossibility. This leads to the evident fact that this world contains some inner imperfections that are necessarily realized in creation. Thus the world, although it is the best possible, is not necessarily the best for all human spirits at the same time.[194] Not everything in the best of all possible worlds is totally good.

In his description of divine decision-making, Leibniz distinguished between the antecedent and the consequent wills of God. The consequent will executes the action and thus is the last stage of deliberation, while the antecedent will is a motive for an action (an inclination to action). The latter represents a particular good and the former looks towards the whole.

> "…consequent will, final and decisive, results from the conflict of all the antecedent wills, of those tending towards good, even of those that repel evil; and from the concurrence of all these particular wills comes the total will…in this sense, too, it may be said that the antecedent will is efficacious in a sense and even effective with success."[195]

Because God has to take account of multiple goods, and not only human happiness, the world, although the best possible, contains human unhappiness. This marks a clear change in Leibniz's views - the universe is no longer made only for spirits.

> "Virtue is the noblest quality of created beings, but it is not the only good quality of creatures. There are innumerable others that attract the inclination of God: from all these inclinations there results the most

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Leibniz tried to find a middle way between these two views. See Brown, *Leibniz*, pp. 25-26.

[194] See *Essais de Theodicée*, §118-119.

[195] "…volonté consequente, finale et decisive, resulte du conflit de toutes ces volontés antecedentes, tant de celles qui tendent vers le bien, que de celles qui repoussent le mal; et c'est du concours de toutes ces volontés particulieres, que vient la volonté totale…en ce sens qu'on peut dire que la volonté antecedente est efficace en quelque façon, et même effective avec succès." (*Essais de Theodicée*, §22). G VI, p. 116; H, p. 137.

> possible good, and it turns out that if there were only virtue, if there were only rational creatures, there would be less good."[196]

The inhabitants of the best world must understand that one should be content with the things as they are and be thankful for this marvellous world-order:

> "…the very nature of things implies that this order in the Divine City, which we see not yet here on earth, should be an object of our faith, of our hope, of our confidence in God. If there are any who think otherwise, so much the worse for them, they are malcontents in the State of the greatest and the best of all monarchs; and they are wrong not to take advantage of the examples he has given them of his wisdom and his infinite goodness, whereby He reveals himself as being not only wonderful, but also worthy of love beyond all things."[197]

There might be a world in which any given misfortune is avoided, but it might lack some good in other respects. Leibniz denied that a world wholly without sin and suffering is better than this other world.[198]

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[196] "La vertu est la plus noble qualité des choses creés, mais ce n'est pas la seule bonne qualité des Creatures. Il y en a une infinité d'autres qui attirent l'inclination de Dieu: de toutes ces inclinations resulte le plus de bien qu'il se peut, et il se trouve que s'il n'y avoit que vertu, s'il n'y avoit que Creatures raisonnables, il y auroit moins de bien." (*Essais de Theodicée*, §124) G VI, pp. 178-79; H, p. 198.

[197] "…la nature même des choses porte que cet ordre de la Cité Divine, que nous ne voyons pas encor icy bas, soit un objet de nostre foy, de nostre esperance, de nostre confiance en Dieu. S'il y en a qui en jugent autrement, tant pis pour eux, ce sont des mecontents dans l'etat du plus grand et du meilleur de tous les Monarques, et ils ont tort de ne point profiter des echantillons qu'il leur a donnés de sa sagesse et de sa bonté infinie, pour se faire connoitre non seulement admirable, mais encor aimable au delà de toutes choses." (*Essais de Theodicée*, §134) G VI, p. 188; H, p. 207.

[198] "Quelque adversaire...repondra peutêtre à la conclusion par un argument contraire, en disant que le monde auroit pu être sans le peché et sans les souffrances: mais je nie qu'alors il auroit été meilleur. Car il faut savoir que tout est lié dans chacun des Mondes possibles…" (*Essais de Theodicée*, §7) G VI, p. 106.

Thus the real world is the best of all possible worlds – it contains the highest degree of perfection possible. All other options would be worse – thus God did not create an inferior world on purpose, although Leibniz seemed to think that a world in which He damns the innocent cannot be the best of all possible worlds.[199]

Leibniz also considered the question whether the world increases in perfection over time in *An mundus perfectione crescat* (1694-96) and argued that the world always maintains the same degree of perfection. However, he allowed that parts of the world can increase in perfection. In other words, men can increase their perfection but as this hardly applies to all men at the same time, the degree of perfection stays the same in the world at all times.[200] In some later texts Leibniz suggested that the best of all possible worlds could increase in perfection. This idea was based on the fact that God had created a collection of substances that had the potential of developing into a higher state of perfection.[201] The best world is an ever-changing whole that develops to a full degree of perfection gradually. Thus although it may seem to be imperfect in parts, this may change in the future:

> "Taking the whole sequence of things, the best has no equal; but one part of the sequence may be equalled by another part of the same sequence. Besides it might be said that the whole sequence of things to infinity may be the best possible, although what exists all through the universe in each portion of time may not be the best. It might be therefore that the universe would become better and better if the

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[199] Adams, *Leibniz: Determinist, Theist, Idealist*, p. 22.

[200] See Gr, p. 95. For an account of this theme, see Phemister, *Progress and Perfection of World and Individual in Leibniz's Philosophy, 1694-97*.

[201] I will discuss this theme more fully in Chapter 9.2.

nature of things were such that it was not permitted to reach the best all at once."[202]

3. A Summary of Part I

The first part of this study was dedicated to divine choice, which could be seen as an ideal case and a model of rational decision. I showed in Chapter 1 that God's choice of creating one amongst an infinite number of possible worlds was a hypothetically necessary act. The goodness of the best world inclines God's will, but does not necessitate it. His choice is based on His infinite understanding which takes into account the whole history of each possible world, in other words, all the states of all substances. After comparing an infinite number of compossible wholes or possible worlds, He chose and created the one that is the real world.

The extremely complex choice of the best of all possible worlds is God's alone. Naturally one is curious about His criteria, especially as Leibniz emphasised in many connections that men are supposed to imitate the supremely good and all-knowing God in their actions as far as possible. Although he does not discuss the process of God's choice in detail, he mentions some selection criteria, the most common of which is order in combination with variety. He is not very clear, however, in how exactly these are combined in the best world. This has given rise to competing interpretations, which I discussed in Chapter 2.

Nicholas Rescher supports the trade-off view, according to which order and variety are in tension and the best world is a trade-off between them. According to David Blumenfeld's interpretation, a maximum number of maximally simple laws produce a maximum number of phenomena, and this gives rise to

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[202] "Prenant toute la suite des choses, le meilleur n'a point d'egal; mais une partie de la suite peut être egalée par une autre partie de la même suite. Outre qu'on pourroit dire que toute la suite des choses à l'infini peut être la meilleure qui soit possible, quoyque ce qui existe par tout l'universe dans chaque partie du temps ne soit pas le meilleur. Il se pourroit donc que l'univers allât tousjours de mieux en mieux, si telle étoit la nature des choses, qu'il ne fût point permis d'atteindre au meilleur d'un seul coup." (*Essais de Theodicée*, §202) G VI, p. 237; H, pp. 253-54.

the best world. Thirdly, Donald Rutheford argues that by creating optimal order God finds a place for a harmonious maximal collection of substances in which metaphysical goodness is maximised.

I find Nicholas Rescher's trade-off view the most adequate explanation of the criteria God employs in creating the best world. I have argued at length that, while the rival interpretations of David Blumenfeld and Donald Rutherford are certainly plausible, they suffer from insufficient understanding of Leibniz's architectonics, which was at the heart of the problem: architectonic considerations played a central role in his important metaphysical writings from the end of 1690s, *Tentamen anagogium* and *De rerum originatione radicali*, both of which specifically discuss final causes in nature and the decision rule used by God in His choice of the best world.

Thus I think Leibniz's position was that the best world was a unique optimum determined by minima (laws) or maxima (phenomena). The architectonic determination between minima or maxima (an application of the mathematical doctrine known today as the calculus of variations) produces a continuous whole in which each part of the universe is optimal. The German astrophysicist C. F. von Weizsäcker expressed the idea as follows: "And the perfection of the world in which variational principles hold, consists in the fact that it unites the greatest richness in phenomena by a law as simple, and as transparent for the mind as possible; It consists in the fact that such a world possesses the greatest intellectual beauty."[203] This kind of world, it seems to me, is what Leibniz described of length in *Essais de Theodicée*: an optimum that best illustrates God's wisdom and goodness.

In my view, the trade-off view captures Leibniz's architectonics well, and is supported by textual evidence, not only in the two memoirs mentioned above, but also in other sources discussed in Chapter 2. The most problematic passage in this regard is PNG, §10, in which he claims that the phenomena is produced by the

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[203] Quoted in Gale, *Leibniz and Metaphysical Perfection, Physical Optimality, and Method in Physics; or, a Real tour de force*, p. [21].

most simple means. I have argued, however, that this could be understood metaphorically.

A further difficulty with the trade-off-view lies in Leibniz's insistence that the best world also includes the most moral goodness. Rescher holds that this moral goodness is a consequence of metaphysical determination and a feature of the optimal character of the best world. In the light of *De rerum originatione radicali* I think this view could be considered reasonable.

Part II

Human Cognition, Reasoning and the Theory of Probability

4. Human Reasoning and Cognition

This second part, which is meant to present the necessary background information of Leibniz's theory of human deliberation, concerns mainly human reasoning and cognition, both of which are related to the intellect of the human soul. It is essential to keep in mind here that Leibniz was, in many respects, a follower of the scholastic thought of Thomas Aquinas, who considered the intellect to be above the will in the soul. The rationality of human decisions is to be found in the acts of the intellect rather than in the operations of the will (I will return to this theme in Chapter 10.2.1.).

Every judgement of the intellect involves two mental components: cognition and reasoning. Cognition, in general, is the substance perceiving the world, namely other substances and their creator, God, in a more or less confused manner.[204] Each substance or monad represents (mirrors, expresses) the whole universe from

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[204] "Car l'ame est un petit monde où les idées distinctes sont une representation de Dieu et où les confuses sont une representation de l'univers." (*Nouveaux essais*, II, 1, §1) A VI, 6, p. 109. "Sed perceptio nihil aliud est, quam illa ipsa repraesentatio variationis externae in interna." (a fragement concerning the souls of animals) G VII, pp. 329-30.

its unique perspective, and this representation is the "raw" material for human cognition.[205]

Reasoning entails the linking together of truths by processing the material we perceive with the help of accepted rules of operation or transformation, in other words, of logical principles which are based on innate ideas.[206] I will first discuss these principles and then proceed to consider cognition or perception in general.

4. 1. Truths of Reason vs. Truths of Fact

Leibniz repeated the essential starting-point of his theory of reasoning in *La Monadologie*, §33:

> "There are also two kinds of truths, truths of reasoning and truths of fact. Truths of reasoning are necessary, and their opposite is impossible. Truths of fact are contingent, and their opposite is possible. When a truth is necessary, we can find the reason for it by analysis, breaking it down into simple ideas and truths until we reach the primitive."[207]

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[205] "…non seulement l'ordre de l'univers entier est le plus parfait quie se puisse, mais aussi que chaque miroir vivant representant l'univers suivant son point de veue..." (PNG, §12). G VI, p. 603.

[206] "Omnis raticinatio nostra nihil aliud est quam characterum connexio et substitutio, sive illi characteres sint verba sive notae, sive denique imagines." G VII, p. 31; "Omnis humana raticinatio signis quibusdam sive characteribus perficitur." G VII, p. 204. See also *Essais de Theodicée*, *Discours preliminaire de la conformite de la foy avec la raison*, §1 (G VI, p. 49), in which Leibniz argued that reasoning consists of the linking together of truths. I am grateful to Prof. Donald Rutherford for this reference.

[207] "Il y a aussi deux sortes de Verités, celles de Raisonnement et celles de Fait. Les Verités de Raisonnement sont necessaires et leur opposé est impossible, et celles de Fait sont contingentes et leur opposé est possible. Quand une verité est necessaire, on en peut trouver la Raison par l'Analyse, la resolvant en idées et en verités plus simples, jusqu'à ce qu'on vienne aux primitives." (G VI, p. 612; L, p. 646.) Leibniz distinguished these two kinds of truths on many other occasions, for instance in *Essais de Theodicée* (§170, §282, §367, among others), *De contingentia* (Gr, p. 303),

The truths of reasoning (also known as truths of reason, or necessary truths) can, in principle, be demonstrated by finite (or, human) analysis or reasoning. The negation of a necessary truth is impossible, in other words, a contradiction. The analysis of truths of reason proceeds by replacing definable terms with their definitions until a self-repetitive identity (tautology) is found.[208]

> "...it is clear that demonstration is a chain of definitions. For in the demonstration of any proposition, nothing is used but definitions, axioms (in which I include postulates here), theorems that have been demonstrated previously, and experiments. Since the theorems, again, must themselves all be demonstrated…it follows that all truths can be resolved into definitions, identical propositions and experiments - though purely intelligible truths do not need observations. After the analysis has been completed, it will become manifest that the chain of demonstration begins with identical propositions or experiments and ends in a conclusion, but that the beginning is connected with the conclusion through intervening definitions. In this sense I said that a demonstration is a chain of definitions."[209]

Nouveaux Essais, preface (A VI, 6, pp. 50-51), in a letter to Bourguet (G III, p. 550) and in *Remarques sur le Livre de l'origine du mal, publié depuis peu en Angleterre* (an appendix to *Essais de Theodicée*) (G VI, p. 404).

[208]Leibniz usually gave the rules of mathematics or geometry as examples of these kinds of truths. For an example of the latter, see *Nouveaux Essais*, IV, xi, §14 (A VI, 6, pp. 446-447).

[209] "Hinc patet, Demonstrationem esse catenam definitionum. Nam in demonstratione alicujus propositionis non adhibentur nisi definitiones, axiomata (ad quae hoc loco postulata reduco), theoremata jam demonstrata et experimenta. Cumque theoremata rursus demonstrata esse debeant…patet denique omnes veritates resolvi in definitiones, propositiones identicas et experimenta (quanquam veritates pure intelligibiles experimentis non indigeant) et perfecta resolutione facta apparere, quod catena demonstrandi ab identicis propositionibus vel experimentis incipiat, in conclusionem desinat, definitionum autem interventu principia conclusioni connectantur, atque hoc sensu dixeram Demonstrationem esse catenam definitionum." (A letter to Herman Conrig, 1678) G I, p. 194; L, p. 187.

Of the truths of reason Leibniz mentioned those of logic, arithmetic and geometry, such as "A=A".[210] He also accepted some general propositions of metaphysics and ethics that are grounded on our innate notions and do not require sense perceptions.[211] Perhaps the most important of these is the moral instinct of pursuing joy and avoiding sorrow, and the *Cogito* argument made famous by Descartes.[212] I will return to these notions in the next section.

Related to the analysis is Leibniz's principle of the identity of indiscernibles, according to which if two substances have exactly the same degree of distinctness and the same properties, they are the same substance. This is a central principle in Leibniz's metaphysics, according to which each substance has its unique complete individual notion, but also in human reasoning concerning the truths of reason, in which it acts as a method of individuation.

Perhaps the most important principle, however, is *praedicatum inest subjecto*, which means that the predicate is always included in the subject.[213] Human analysis proceeds in a finite number of steps by demonstrating that the concept of the predicate is included in that of the subject. To use Leibniz's own example, if we say that "Every pious man is happy", the connection between the concepts of the pious man and of the happy man is such that anyone who

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[210] Leibniz usually referred to "identicals", but this term is a synonym for "tautology", since the identicals repeat the same thing without giving any new information. Parkinson, *Logic and Reality in Leibniz's Metaphysics*, p. 57.

[211] "La Logique encore avec la Metaphysique et la Morale, dont l'une forme la Theologie et l'autre la Jurisprudence, naturelles toutes deux, sont pleines de telles vérites; et par consequent leur preuve ne peut venir, que des principes internes, qu'on appelle innés." (*Nouveaux essais*, preface) A VI, 6, p. 50; RB, p. 50. See also Kauppi, *Über die Leibnizsche Logik*, p. 54.

[212] See *Remarques sur le livre de l'origine du mal, publié depuis peu en Angleterre*, an appendix to *Essais de Theodicée,* G VI, p. 404. For a comparative account of innate ideas in Leibniz and Descartes, see McRae, *Innate Ideas*.

[213] See, for example, a letter to Arnauld 14. 7. 1686, in which Leibniz stated his principle explicitly. G II, p. 56.

understands perfectly the concept of the pious man can understand that it involves the concept of the happy man.[214]

While the analysis of truths of reasoning proceeds by finite steps, the analysis of contingent truths (truths of fact) is a more difficult task: truths of fact require infinite analysis and are thus not within human reach. Contingent truths can be known with certainty only through infinite divine understanding. For humans, knowledge of truths of fact is more or less uncertain - we can only achieve probable knowledge of them. For example, if we say "snow is white", we cannot demonstrate this in finite analysis. Leibniz stated in his fragment *De libertate, contingentia et serie causarum, providentia*:

> "In contingent truths, however, though the predicate inheres in the subject, we can never demonstrate this, nor can the proposition ever be reduced to an equation or an identity, but the analysis proceeds to infinity, only God being able to see, not the end of the analysis indeed since there is no end, but the nexus of terms or the inclusion of the predicate in the subject, since he sees everything that is in the series."[215]

The difference between the two kinds of truths is easy to comprehend when the point of view is transferred to that of God: the truths of reason pertain to every possible world whereas the truths of fact pertain to only one. Leibniz thought that the region of truths of reason was in the understanding of God, and that God could not create anything outside of the realm of the possible, such as a round triangle.[216] In this respect his world-view was very

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[214] See *Elementa Calculi*, O, p. 51.

[215] "Sed in veritatibus contingentibus, etsi praedicatum insit subjecto, nunquam tamen de eo potest demonstrari, neque unquam ad aequationem seu identitatem revocari potest propositio, sed resolutio procedit in infinitum; Deo solo vidente non quidem finem resolutionis qui nullus est, sed tamen connexionem terminorum, seu involutionem praedicati in subjecto, quia ipse videt quidquid seriei inest..." A VI, 4, p. 1656; L, p. 265.

[216] See *La Monadologie,* §43.

different from Descartes' extreme voluntarism, which postulated that all truths depend on God's will.[217]

Of truths of fact Leibniz discussed facts in general, in other words, empirical knowledge and historical facts (his favourite example was Caesar's crossing of the Rubicon). Their root is in the creation, when God chose which possibilities were realisable and set all substances in their pre-established harmony.

God's choice of the best of all possible worlds was founded on the principle of sufficient reason, which states that nothing happens without a reason why it should be so and not otherwise.[218] As mentioned, the sufficient reason for God's choice in the creation was the fact that there is one single best world. Leibniz apparently thought the principle of sufficient reason was self-evident, and used it in different ways in different contexts: this gave his contemporaries, such as Clarke, some problems.[219]

In metaphysics divine analysis reaches all states of each substance. God can foresee everything that happens to a single substance, both in the past and in the future, through the concept of complete individual notion, as Leibniz explained in his famous example of King Alexander the Great:

> "God, seeing Alexander's individual notion or *haecceity*, sees in it at the same time the basis and reason for all the predicates that can be said truly of him, for example that he vanquished Darius and Porus; he even knows *a priori* (and not by experience) whether he died a natural

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[217] See Alanen, *Descartes's Concept of Mind*, p. 37f.

[218] On the history of the principle before Leibniz, see Wiggins, *Sufficient reason: a principle in diverse guises, both ancient and modern*.

[219] R. J. Sleigh formulates the different versions as follows: 1) For any fact (or event or entity) e that obtains (or exists), there is some reason why it obtains (or exists) and is not otherwise (quasi-causal principle) 2) For any proposition p, if p is true, then there is a sufficient reason why p is true (principle concerning truth conditions). Sleigh, *Leibniz on the Two Great Principles of All Our Reasonings*, p. 35. For different versions of the principle of sufficient reason, see also Frankel, *From a Metaphysical Point of View: Leibniz and the Principle of Sufficient Reason*. On Clarke's difficulties in understanding the principle, see Vailati, *Leibniz and Clarke,* pp. 123-24.

> death or was poisoned, something we can know only through history."[220]

Men can know about these kinds of contingent facts only through experience, since there is no way they can analyse contingent truths completely. However, Leibniz argued that we can develop our understanding, and even approach God's infinite understanding although we can never reach it: it is simply impossible for finite beings.

4. 2. Innate Ideas

The distinction between truths of reason and truths of fact is also vital in Leibniz's innatism. Truths of reason are needed in order for men to acquire reliable knowledge.[221] These truths, or innate ideas as he also called them, are born with us and are in our minds although we do not always use them or are aware of them. They are in our minds as dispositions or habits.[222] By way of analogy Leibniz mentioned a block of marble in which there are veins that have the shape of Hercules rather than other shapes, and in this sense it could be said that Hercules is innate in the marble.[223]

Through innate truths we perform adequate reasoning and find the basis for mathematics, logic and ethics.

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[220] "…Dieu voyant la notion individuelle ou hecceité d'Alexandre, y voit en même temps le fondement et la raison de tous les predicats qui se peuvent dire de luy veritablement, comme par exemple qu'il vaincroit Darius et Porus, jusqu'à y connoistre à priori (et non par experience) s'il est mort d'une mort naturelle ou par poison, ce que nous ne pouvons sçavoir que par l'histoire." (*Discours de metaphysique*, §8) A VI, 4, pp. 1540-41; AG, p. 41.

[221] "…j'ai toujours eté comme je suis encore pour l'idée innée de Dieu, que M. des Cartes a soutenuë, et par consequent pour d'autres idées innées, et qui ne nous sauroient venir des sens." (*Nouveaux essais* I, 1, §1) A VI, 6, p. 74. Leibniz argued here against Locke's notion of *tabula rasa*.

[222] "...les idées et les verités nous sont innées, comme des inclinations, des dispositions, des habitudes ou des virtualités naturelles…" (*Nouveaux essais*, preface) A VI, 6, p. 50.

[223] See *Nouveaux essais*, preface, A VI, 6, p. 52.

> "…there is a light that is born with us. For since the senses and induction can never teach us truths that are fully universal or absolutely necessary, but only what is and what is found in particular examples, and since we are privileged above the beasts – it follows that we have drawn these truths in part from what is within us. Thus one can lead a child to them by simple questions in the Socratic manner…"[224]

Our mind is the source of truths of reason and we cannot draw them from experience. The information that comes from it is simply better with respect to the degree of clarity and distinctness than the information that comes from the senses (NE I, i, §10). "The light of nature, as it is called, involves distinct knowledge."[225]

The innate principle of pursuing joy and avoiding sorrow, on the other hand, is known by instinct, which is a disposition to do good and to love other human beings.[226] This somewhat obscure doctrine has received surprisingly little attention among Leibniz-scholars. It is an innate principle, but it is not a truth of reason in the sense that it can be reached by finite analysis since it is based on inner experience and confused cognition. In itself it could be compared with animal instincts, since animals strive for the good

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[224] "…il y a une Lumiere née avec nous. Car puisque les sens et les inductions ne nous sauroient jamais apprendre des verités tout à fait universelles, ny ce qui est absolument necessaire, mais seulement ce qui est, et ce qui se trouve dans des exemples particuliers, et puisque nous connoissons cependant des verités necessaires et universelles des sciences, en quoy nous sommes privilegiés au dessus des bestes: il s'ensuit que nous avons tiré ces verités en partie de ce qui est en nous. Ainsi peut-on y mener un enfant par des simples interrogations à la maniere de Socrate…" (*Lettre touchant ce qui est independant des Sens et de la Matiere*) G VI, pp. 505-506; L, p. 551. Leibniz was referring here to Plato's *Meno*, 82b-.

[225] "…ce qu'on appelle la lumiere naturelle suppose une connoissance distincte…" (*Nouveaux essais* I, i, §21) A VI, 6, p. 84; RB, p. 84.

[226] Some principles of jurisprudence or undemonstrated non-identical axioms of geometry are also reached by instinct. McRae, *Leibniz: Perception, Apperception and Thought*, p. 120.

that is suitable for them.[227] In what follows I will refer to the innate principle as moral instinct.

Leibniz held that this could act as a basis for scientific demonstration, so that robbers, pirates and bandits would be compelled to observe its dictates.[228] His reasoning was that the increase in universal perfection produced pleasure and decreased pain. When the intellect finds that a proposed course of action seems to produce joy in the form of pleasure of the mind, the moral instinct recommends it.[229] Similarly, when we feel pain our moral instinct tells us in the form of mental pain that the deed we are about to do is to be avoided. I will return to this theme in Chapter 10 of this study.

4. 3. The Theory of Cognition

While innate ideas act as the principles of reasoning, cognition provides the raw material for understanding. The theory of cognition is a key ingredient in Leibniz's philosophy, but his views on the concept are scattered throughout the work he produced during his career.[230] He generally discussed cognition with regard to substances in a metaphysical or scientific context, and although the basic setting remained the same, he introduced important new features in his later work.

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[227] "Il semble que tout le monde entend par l'instinct, une inclination d'un animal à ce qui lui est convenable, sans qu'il en conçoive pour cela la raison." (*Nouveaux essais* III, xi, §8) A VI, 6, p. 351.

[228] "Aussi voyons nous qu'elle enseigne des verités si evidentes, que les larrons, les pirates et les bandits sont forcés de les observer entre eux." (*Nouveaux essais* I, ii, §1) A VI, 6, p. 89. Leibniz was referring here to the principles of justice.

[229] "…tout sentiment est la perception d'une verité, et que le sentiment naturel l'est d'une verité innée, mais bien souvent confuse, comme sont les experiences des sens externes…" (*Nouveaux essais* I, ii, §10) A VI, 6, p. 94.

[230] McRae, *Leibniz: Perception, Apperception, and Thought*, p. 3. Leibniz himself, of course, did not profess to write anything about epistemology or the theory of knowledge, since the discipline was not established until the 19th century. For a discussion, see Schepers, *Non alter, sed etiam Leibnitinius*, p. 122.

Leibniz distinguished three principal cognitive terms, namely "perception", "apperception" and "thought." He discussed *perceptions* in *Meditationes de cognitione, veritate et ideis* (1684), which was his most important epistemological work. Perceptions are the monad's inner states that represent the external world. In addition, perception refers to the mental operation of perceiving, and thus perceptions are representations and characteristics of each monad, however obscure or confused they may be. For him, representation was cognition in general - representations were information for monads.

In *Nouveaux essais sur l'entendement humain* (published in 1765, first draft written in 1704) Leibniz distinguished perception from *apperception* which he described as the reflexive perception of the inner states of the monad. While we experience a multitude of perceptions at the same time, we do not have apperceptions all the time.[231] There is also *thought*, which is knowledge of the truths of both reason and fact, and is only accessible to spirits and not to animal souls. Leibniz's later works, *La Monadologie* and *Principes de la nature et de la grâce, fondés en raison* (1714), include further discussion of the features of apperception and the differences between human and animal cognition.

4. 3. 1. The Theory of Cognition in Meditationes de cognitione, veritate et ideis

The memoir *Meditationes de cognitione, veritate et ideis* appeared in *Acta eruditorum* in November 1684, and is commonly regarded as Leibniz's first mature philosophical publication. It was meant, on the one hand, to address the discussion between Antoine Arnauld and Nicholas Malebranche, the two most famous Cartesians at that time, and to clarify Descartes' theory of ideas on the other. Leibniz combined the views of Descartes and Spinoza and gave their terms new meanings. The memoir opens with a classification of different kinds of cognition:

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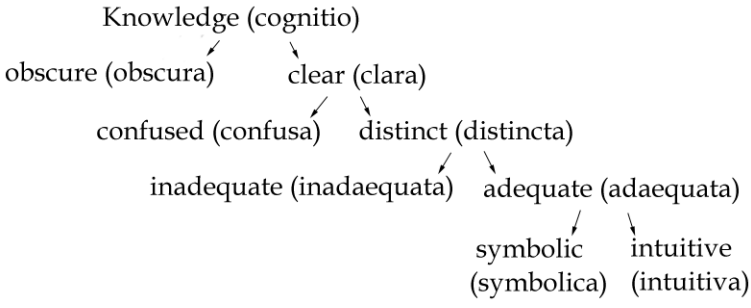
[231] See *Nouveaux essais* II, xix, §4.

> "…cognition is either obscure or *clear*, and again, clear cognition is either confused or *distinct*, and distinct cognition either inadequate or *adequate*, and adequate cognition either symbolic or *intuitive*: and indeed, if cognition were, at the same time, both adequate and intuitive, it would be absolutely perfect."[232]

This classification could be illustrated as follows:



Our perception is obscure when we cannot properly recognise the object in question and may confuse it with some other similar object. Our perception is clear when we can identify the object in question without any doubt. There are two kinds of clear perception: we have a confused (clear) perception, for example, when we try to describe a certain taste or shade to someone but do not succeed – the other person has to experience the thing in question himself or herself.

Distinct (clear) perception is advanced cognition. It concerns perceptible quantities such as numbers, shapes and magnitudes, which can be analysed and empirically tested. It is usually possible to give nominal definitions to these kinds of objects of knowledge,

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[232] "…cognitio vel obscura vel clara; et clara rursus vel confusa vel distincta; et distincta vel inadaequta vel adaequata, item vel symbolica vel intuitiva: et quidem si simul adaequata et intuitiva sit, perfectissima est." A VI, 4, pp. 585-86; L, p. 291.

and these definitions enumerate the sufficient marks that distinguish the object from other objects.[233]

Objects thus defined may include properties that are perceived distinctly, but inadequately. The result is inadequate (distinct) perception. When all the properties of the object are distinctly known, or an analysis has been carried through, adequate (distinct) perception has been reached. Leibniz found no good example of this provided by human thought, although knowledge of numbers (mathematics) certainly approached it.[234] He further divided adequate perception into two classes, symbolic and intuitive cognition, describing the former as follows:

> "…we do not usually grasp the entire nature of a thing all at once, especially in a more lengthy analysis, but in place of the things themselves we make use of signs, whose explicit explanations we usually omit for the sake of brevity, knowing or believing that we have the ability to produce it at will."[235]

Leibniz took as an example a polygon with a thousand equal sides. When we think of such a polygon we do not usually carry through an analysis in every detail, but, as it were, pass over or bracket the properties that can be replaced with symbols or signs. He called this cognition (often applied in algebra or arithmetic) symbolic or blind (adequate) thinking: we usually have blind thoughts about composite concepts. While blind thinking is a species of adequate thinking, the analysis is not necessarily extended as far as simple concepts.

Blind thinking can be very useful in a difficult analysis. For example, if we are asked to prove the proposition "Every man is

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[233] A VI, 4, p. 586-87. Leibniz's view of nominal definitions differed from the one employed in the modern philosophy of science, in which they are usually regarded as agreements on the use of some specific word. As an example he mentioned the assayer's notion of gold (A VI, 4, p. 587).

[234] Ibid.

[235] "Plerumque autem, praesertim in Analysi longiore, non totam simul naturam rei intuemur, sed rerum loco signis utimur, quorum explicationem in praesenti aliqua cogitatione compendii causa solemus praetermittere, scientes aut credentes nos eam habere in potestate." A VI, 4, p. 587; L, p. 292.

rational" and we reduce it to "Every rational animal is rational", we have done what is required, even though the concepts "rational" and "animal" could be analysed further.[236] Thus we can use "blind thoughts" (*cogitationes caecae*) as logical symbols or signs, which are, as it were, shorthand for the distinct perceptions we have. In long chains of reasoning they might replace an effort of the imagination that would require an extremely long time.[237] This method has often been considered the precursor of symbolic logic.[238] However, the "blind", unanalysed elements may sometimes lead us into making wrong judgements, and may include uncertainties of which we are not fully aware.[239] That which looks clear and distinct to a diligent person, for example, may in fact be sometimes confused and obscure.

If we are able to reach all the components of a complex notion we have acquired intuitive cognition, the most essential feature of which is that the full content of all the terms involved are completely present in the process of cognition. It is at the same time a direct view of the matter at hand, and of something that cannot be analysed any further. It is thus more adequate than cognition, which is reached by blind thoughts. While the latter includes symbolic "substitutes", intuitive cognition requires all the components of the object of knowledge to be acquired by adequate

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[236] P, p. xxix.

[237] Maat, *Philosophical Languages in the Seventeenth Century: Dalgarno, Wilkins, Leibniz*, p. 307.

[238] See Peckhaus, *Logik, Mathesis universalis und allgemeine Wissenschaft*, p. 63 and Dascal, *La sémiologie de Leibniz*.

[239] A VI, 4, pp. 587-88. As an example Leibniz took the notion of the highest speed. As we cannot think of the highest possible speed, we cannot likewise form an idea of the most perfect being, that is, God, although we can be sure of the possibility of that kind of being. However, while the notion of the highest speed is absurd, the notion of the most perfect being is not, although we cannot construct our arguments on it. In *Meditationes* Leibniz referred to Anselm's demonstration of the existence of God, which Thomas Aquinas rejected. See A VI, 4, p. 589. However, in other writings he discussed other kinds of ontological arguments on behalf of God's existence, which I cannot discuss here. For a relevant discussion, see Adams, *Leibniz: Determinist, Theist, Idealist*, p. 135f.

perception at the same time. Perfect cognition is a vision through analysis, which enables all the truths of reason and of fact, and the relations between them, to be seen instantly at a glance.[240] While perfect cognition is possible only for God, even intuitive cognition seems to be a rare exception amongst men.[241]

4. 3. 2. Minute Perceptions

At the end of the *Meditationes* Leibniz introduced his *petites perceptions*, minute perceptions that do not rise above the threshold of consciousness, but which nevertheless affect our judgement and behaviour. These "little" perceptions are either too minute and too numerous, or else too unvarying to be distinctive on their own, but when they are combined with others they make themselves known within the whole, at least confusedly. They are perceived as clear, but confused.

However, these minute perceptions may also help in distinguishing an object from others, and allow us to distinguish qualities such as colour or taste.[242] They may be confused in themselves, but as a whole they may be vivid, thus capturing the attention of the soul.

> "...when we perceive colours or odours, we are having nothing but a perception of figures and motions so complex and minute that our mind in its present state is incapable of observing each distinctly and therefore fails to notice that its perception is compounded of single perceptions of exceedingly small figures and motions. So when we mix

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[240] The idea of intuition is similar to that expressed by Duns Scotus, who took it to be an act of simple awareness in which some object is grasped holistically (*simul totum*) as present. See Wolter, *The Philosophical Theology of John Duns Scotus*, p. 98f. In *Nouveaux Essais* IV, xvii, §13 Leibniz argued that there are instances, in which vision is better than reason. A VI, 6, p. 488.

[241] See A VI, 4, p. 1568.

[242] In *Nouveaux essais* Leibniz commented on Locke's primary and secondary qualities and, not surprisingly, considered secondary qualities to be confused whereas primary qualities are perceived distinctly. NE II, viii, §10. See A VI, 6, p. 130. As far as I know, Leibniz did not make the distinction elsewhere.

> yellow and blue powders and perceive a green colour, we are in fact sensing nothing but yellow and blue thoroughly mixed; but we do not notice this and so assume some new nature instead."[243]

Our minute perceptions represent degrees of shades, and when they are sufficiently mixed we perceive the mixture as green. Thus colours are perceived confusedly, and this is why it is so difficult to explain to others the subjective experience of the colour green.[244]

Leibniz assigned new tasks to minute perceptions in the preface to *Nouveaux essais*: they are important in forming the intermediate steps between different-level perceptions in that they ensure that the soul always perceives.[245] Even when we have no clear and distinct perceptions, we always have minute perceptions. It is these little perceptions that ensure that the soul always thinks, even in sleep.[246] As a result, personal identity is maintained and it will not fade even after the body has been destroyed:

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[243] "Caeterum cum colores aut odores percipimus, utique nullam aliam habemus quam figurarum, et motuum perceptionem, sed tam multiplicium et exiguorum, ut mens nostra singulis distincte considerandis in hoc praesenti suo statu non sufficiat, et proindre non animadvertat perceptionem suam ex solis figurarum et motuum minitissimorum perceptionibus compositam esse, quemadmodum confusis flavi et caerulei pulvisculis viridem colorem percipiendo, nil nisi flavum et caeruleum minutissime mixta sentimus, licet non animadvertentes et potius novum aliquod ens nobis fingentes." (*Meditationes de cognitione, veritate et ideis)* A VI, 4, p. 592; L, p. 294.

[244] Leibniz continued his discussion in *Nouveaux essais* III, iv, §15 as follows: "Il y a pourtant quelque difficulté sur les idées qui ne sont simples qu'à nostre egard. Par exemple il seroit difficile de marquer precisement les bornes du bleu et du verd, et en general de discerner les couleurs fort approchantes, au lieu que nous pouvons avoir des notions precises des termes dont on se sert en arithmetique et en Geometrie." A VI, 6, p. 298. He related shades of colour to the variation of light.

[245] *Nouveaux essais* contained Leibniz's most extensive discussion of minute perceptions. See also *La Monadologie,* §14.

[246] "D'aillieurs on ne dort jamais si profondement, qu'on n'ait quelque sentiment foible et confus; et on ne seroit jamais eveillé par le plus grand bruit du monde, si on n'avoit quelque perception de son commencement, qui est petit..." (*Nouveaux essais*, preface) A VI, 6, p. 54.

> "The insensible perceptions also indicate and constitute the same individual, who is characterized by the vestiges or expressions that the perceptions preserve from the individual's former states, thereby connecting these with his present state…death can only be a sleep, and not a lasting one at that: the perceptions merely cease to be sufficiently distinct."[247]

There are also other metaphysical tasks reserved for minute perceptions. By forming a bridge between different-level perceptions they constitute universal harmony and secure parallelism between mind and body:

> "It is also through insensible perceptions that I account for that marvellous pre-established harmony between the soul and the body, and indeed amongst all the monads or simple substances which takes the place of an untenable influence of one on another…"[248]

The principle of the identity of indiscernibles is also related to minute perceptions, since the difference between two objects of analysis may be one of degree.[249] For example, we might distinguish two similar-looking liquids just by a slight difference in taste, and this difference is based on minute perceptions. The same applies to cases of indifference or equilibrium. In deliberation

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[247] "Ces perceptions insensibles marquent encore et constituent le même individu, qui est caracterisé par les traces, qu'elles conservent des estats précedens de cet individu, en faisant la connexion avec son estat present…la mort ne sauroit estre qu'un sommeil, et même ne sauroit en demeurer un, les perceptions cessant seulement à être assez distinguées…" (*Nouveaux essais*, preface) A VI, 6, p. 55; RB, p. 55.

[248] "C'est aussi par les perceptions insensibles que j'explique cette admirable harmonie préestablie de l'ame et du corps, et même de toutes les Monades ou substances simples qui supplée à l'influence insoutenable des uns sur les autres…." (*Nouveaux essais*, preface) A VI, 6, p. 55; RB, p. 55.

[249] "En un mot les perceptions insensibles sont d'un aussi grand usage dans la Pneumatique, que les corpuscules dans la physique; et il est ègalement déraisonnable de rejetter les uns et les autres, sous pretexte qu'elles sont hors de la portée de nos sens." (*Nouveaux essais*, preface) A VI, 6, p. 56.

there is always something that affects the judgement and makes us choose between the options.

> "…these minute perceptions, which determine our behaviour in many situations without our thinking of them, and which deceive the unsophisticated with an appearance of indifference of equilibrium – as if it made no difference to us, for instance, whether we turned left or right."[250]

As mentioned above, we perceive the mixture of yellow and blue as green. There are many similar cases in which our cognition makes mistakes. In *Nouveaux essais* Leibniz presented an example of a cogwheel. When the wheel is rotating swiftly it produces an artificial transparency – its teeth disappear and an imaginary transparent ring appears in their place. We cannot distinguish the teeth until the rotation slows down. The situation is similar with colours, smells, tastes, surfaces and other sensory images or qualities, of which we have clear but not distinct perceptions and ideas.[251] However, as in the case of the cogwheel, minute perceptions combined can capture the attention of the mind in the form of clear but confused perceptions. Leibniz described this phenomenon in his famous example of the sea:

> "...I am accustomed to using the example of the roar or sound of the sea, which impresses itself on us when we are standing on the shore.

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[250] "…ces petites perceptions qui nous déterminent en bien des recontres sans qu'on y pense, et qui trompent le vulgaire par l'apparence d'une indifference d'équilibre, comme si nous estions indifferens de tourner par example à droite ou à gauche. (*Nouveaux essais*, preface) A VI, 6, p. 56.

[251] See NE IV, vi, §7, A VI, 6, pp. 404-405. I agree with Stephen M. Puryear, who argues that Leibniz understood confused perceptions and confused ideas in a similar manner, that we can understand the whole, but our conception of its ingredients is confused. See Puryear, *Was Leibniz Confused About Confusion*?, pp. 102-111. Compare also Leibniz's account in *Lettre touchant ce quie est independent des Sens et de la Matiere*: "…on a coustume de dire que les notions de ces qualitiés sont claires, car elles servent à les reconnoistre; mais que ces mêmes notions ne sont point distinctes, parce qu'on ne sauroit distinguer ny developper ce qu'elles comprennent. C'est un je ne say quoy, dont on s'apperçoit, mais dont on ne sauroit rendre compte." G VI, p. 500.

> To hear this sound as we do, we must hear the parts that make up this whole, that is, the noise of each wave, although each of these little noises makes itself known only when combined confusedly with all the others, and would not be noticed if the wave making it were by itself. We must be affected slightly by the motion of this wave, and have some perception of each of these noises, however faint they may be; otherwise there would be no perception of a hundred thousand waves, since a hundred thousand nothings cannot make something."[252]

In this way a mass of minute perceptions may capture our attention and leave a single clear and distinct perception in the shade. These combinations of minute perceptions constitute passions, which are perceived as temporary inclinations, that is, as sentiments of pleasure or pain. Thus the minute perceptions are also related to the moral instinct. As I will show in Chaper 9.1., when confused, minute perceptions produce (with the help of the imagination) the sentiment of an increase in perfection or harmony in relation to some proposed course of action in deliberation, the moral instinct guides the soul to strive for that goal because it produces joy.

However, these perceptions can also lead us astray and our judgement may be tricked by them. They may affect our judgement in the form of inclinations or appetitions, which bring in apparent, sensual goods. They are necessarily present in each rational choice, and in combination may outweigh or overcome other inclinations consisting of clear and distinct perceptions

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[252] "…j'ay coutume de me servir de l'exemple du mugissement ou du bruit de la mer dont on est frappé quand on est au rivage. Pour entendre ce bruit, comme l'on fait, il faut bien qu'on entende les parties, qui composent ce tout, c'est-à-dire le bruit de chaque vague, quoyque chacun de ces petits bruits ne se fasse connoître que dans l'assemblage confus de tous les autres ensemble, et qu'il ne se remarqueroit pas si cette vague, qui le fait, estoit seule. Car il faut qu'on en soit affecté un peu par le mouvement de cette vague, et qu'on ait quelque perception de chacun de ces bruits, quelques petits qu'ils soyent; autrement on n'auroit pas celle de cent mille vagues, puisque cent mille riens ne sauroient faire quelque chose." (*Nouveaux essais*, preface) A VI, 6, p. 54; RB, p. 54. See also *Discours de Metaphysique*, §33.

which bring in real goods. If the judgement is not developed enough, it may choose these apparent goods instead of the real goods, in some case even against its better knowledge. Thus minute perceptions play an essential role in human rational deliberation. By developing his or her understanding a rational moral agent can decrease their effect in his or her deliberations. I will return to this theme in detail in Chapter 10.3.

4. 3. 3. Apperception, Attention, Memory and Imagination

In his *Nouveaux essais* Leibniz introduced a new concept, apperception,[253] which is given a number of tasks. He did not define it explicitly, but discusses it in greater detail in *Principes de la nature et de la grace, fondés en raison*, paragraph four:

> "It is well to distinguish between perception, which is the inner state of the monad representing external things, and apperception, which is consciousness, or the reflective knowledge of this inner state, and which is not given to all souls, nor at all times to the same soul."[254]

and *La Monadologie*, section 14:

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[253] One terminological note concerning Leibniz's notion of apperception needs to be made. In Leibniz's French to perceive is "percevoir", and to be aware of is "s'apercevoir de". The noun for the former is "perception", while for the latter Leibniz coined "apperception". (RB, p. xlix). Remnant and Bennett in general translate "apperception" by awareness and "s'appercevoir de" into be aware of something, which is somewhat misleading in tracing Leibniz's views of reflection, since the considered apperception is a technical term (related to innate ideas as I will show), while being aware seems to be a general term for noticing something, in other words, attention. (See also G. MacDonald Ross's article *Remnant and Bennett's "New Essays": A Reply for criticisms*). I have used the terms "apperception" and "has apperception of" in the modified translations of Remnant's and Bennett's *New Essays on Human Understanding*.

[254] "…il est bon de faire distinction entre la Perception, qui est l'etat interieur de la Monade representant les choses externes, et l'Apperception qui est la Conscience, ou la connoisance reflexive de cet état interieur, laquelle n'est point donnée à toutes les Ames, ny tousjours à la même Ame." G VI, p. 600; AG, p. 208.

> "The passing state, which involves and represents a multitude in the unity or in the simple substance, is nothing other than what one calls perception, which should be distinguished from apperception and consciousness." [255]

There are two different notions here: the first is consciousness [*conscience*] and the second is apperception [*apperception*], which is defined in PNG, §4 as reflexive knowledge of the monad's inner state. Furthermore, in PNG, §5, Leibniz referred to reflective acts that are capable of considering what is called "I."[256] He identified apperception with consciousness in the former citation, while in the latter it seems to be separate from it. He also argued in PNG, §4 that apperception is not accessible to all souls, and that it is not constant in the same soul.[257]

Leibniz usually linked apperception with the notion of "I", or the self. In *La Monadologie*, §30, for example, he stated: "It is also through the knowledge of necessary truths and through their abstractions that we rise to reflective acts, which enable us to think of that which is called "I", and to consider that this or that is in us."[258] Thus it would seem that apperception requires knowledge of innate ideas.

Because of Leibniz's lack of clarity on this issue there are various interpretations of the exact meaning of apperception and

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[255] "L'etat passager qui enveloppe et represente une multitude dans l'unité, ou dans la substance simple, n'est autre chose que ce qu'on appelle la Perception, qu'on doit bien distinguer de l'apperception et de la conscience…" G VI, p. 609; AG, p. 214.

[256] "Ces Ames sont capables de faire des Actes reflexifs, et de considerer ce qu'on appelle Moy, Substance, Ame, Esprit, en un mot, les choses et les verités immaterielles. Et c'est qui nous rend susceptibles des Sciences ou des connoissances demonstratives." G VI, p. 601.

[257] See also *Nouveaux essais* II, xix, §4: "Nous ne sommes jamais sans perceptions, mais il est necessaire que nous soyons souvent sans apperceptions, savoir lors qu'il n'y a point des perceptions distinguées." A VI, 6, p. 162.

[258] "C'est aussi par la connoissance des verités necessaires et par leur abstractions, que nous sommes élevés aux Actes reflexifs, qui nous font penser à ce qui s'appelle Moy, et à considerer que cecy ou cela est en Nous…" G VI, p. 612; AG, p. 217.

consciousness. The topic is huge and I cannot give a complete account of it here, but I will take a brief critical look at these different interpretations and argue for an intermediate position, which was inspired by Émilienne Naërt. I will also discuss the mental operation of imagination, which plays an important role in Leibniz's views of practical rationality.

According to Robert McRae, "Leibniz's position is that when the perception is sufficiently distinct I become aware that I am perceiving (expressing) the object…Thus the ego is inseparably involved in what we are directly aware of." An essential condition of a perception coming to consciousness is that it is attended to, and this cannot concern minute perceptions.[259]

These views have been criticised by Nicholas Jolley, who holds that apperception means consciousness in general and not necessarily reflective knowledge, which is directed to the "I" and its passing states.[260] According to Jolley, there seems to be some awareness in minute perceptions. This would mean that apperception could concern confused perceptions, which may not necessarily be reflexive, whereas McRae's position requires clear and distinct perceptions in order to enable reflexive cognition. Jolley also criticises McRae for the "unleibnizian" view of supposing a stark contrast between perception and apperception.[261]

Jolley's views are supported by Mark Kulstad, who suggests two different kinds of apperception, the external and the inner. In his detailed account he distinguishes between general consciousness (minimal apperception, which would also include unconscious apperceptions or awareness in minute perceptions) and reflexive apperceptions (full apperception involving clear and distinct ideas), which is self-consciousness.[262]

Before proceeding to evaluate these interpretations I will consider some further cognitive operations related to apperception in Leibniz's writings: attention, sensation and imagination.

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[259] McRae, Leibniz, *Perception, Apperception and Thought*, pp. 26 & 30.
[260] Jolley, *Leibniz and Locke*, p. 109.
[261] Ibid.
[262] Kulstad, *Leibniz on Apperception, Consciousness, and Reflection*, p. 144.

Leibniz held that attention was awareness or reflection in general: "Attention is nothing but reflection."[263] One might think that he was referring to apperception, but he argued in *Nouveaux essais* I, i, §25 that, in fact, it presupposes attention and order.[264] Order evidently refers to the role played by innate ideas.[265] He also postulated that attention is the means by which something is noticed – it concerns perceptions that are heightened or "stand out." Depending on the intellectual abilities of the person, attention prefers clear and distinct ideas to confused perceptions of the senses because they are, by definition, distinguishable from other perceptions and thus, in a sense, heightened.[266] Memory is essential for attention:[267]

> "Memory is needed for attention: when we are not alerted, so to speak, to pay heed to certain of our own present perceptions, we allow them to slip by unconsidered and even unnoticed. But if someone alerts us to them straight away, and makes us take note, for instance, of some

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[263] "…attentio nihil aliud quam reflexio." (*De vi persuadendi. De somnio et vigilia*) A VI, 2, p. 276; L. p. 113. See also *Nouveaux essais*, preface (A VI, 6, p. 51), where Leibniz said: "…la reflexion n'est autre chose qu'une attention à ce qui est en nous…" and *Animadversiones in partem generalem Principiorum Cartesianorum,* G IV, pp. 361-62. See also Kulstad, *Leibniz: Apperception, Consciousness and Reflection*, p. 39. It is generally agreed that Leibniz used the terms consciousness and reflection interchangeably. Ibid., p. 57. Naert distinguished between different species of attention – which is unnecessary in my view if attention is understood as general reflection. See Naert, *Mémoire et conscience de soi selon Leibniz*, pp. 82-83.

[264] "L'apperception de ce qui est en nous depend d'une attention et d'un ordre." A VI, 6, p. 86.

[265] See Kulstad, *Leibniz*: *Apperception, Consciousness and Reflection*, p. 143.

[266] "Nous avons de l'Attention aux objets que nous distinguons et preferons aux autres." (*Nouveaux Essais* II, xix, §1) A VI, 6, p. 161. See also NE II, i, §14, preface (A VI, 6, p. 54) and I, ii, §20 and Naert, *Mémoire et conscience de soi selon Leibniz*, p. 77. McRae holds that noticing is apperception itself which distinguishes minds from animal souls. McRae, Leibniz, *Perception, Apperception and Thought*, p. 30. In the light of these passages, this view seems dubious. On the definition of clear and distinct perceptions, see A VI, 4, pp. 586-87.

[267] For a detailed discussion of memory, see McRae, *Leibniz: Perception, Apperception, and Thought*, p. 43f.

> noise which we have just heard, then we remember it and have apperception of just having had some sense of it."[268]

In the light of the above passage it seems that memory precedes attention, and that apperception is founded on these previous mental operations. Let us suppose, for example, that I am on my way to work and I am travelling by bus. I hear a melody while sitting on the bus reading a magazine. My attention is suddenly captured by the notion that I have heard the song previously. The fact that my attention is fixed on the melody presupposes that I have a previous memory of it and of the song of which it is part. I start to take notice of the music coming from the radio of the bus driver, and as I reflect on the melody and wonder which song it is from and where I have heard it before, apperception takes place.

Assuming this to be a correct description of apperception, the order of mental operations in the process is as follows:

1) sensation (perception with memory[269])
2) attention (reflection in general, requires memory[270])
3) apperception (self-conscious reflection, requires attention and order (innate ideas)) [271]

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[268] "Toute attention demande de la mémoire, et quand nous ne sommes point avertis pour ainsi dire, de prendre garde à quelques unes de nos propres perceptions présentes, nous les laissons passer sans reflexion, et même sans les remarquer. Mais si quelcu'un nous en avertit incontinent, et nous fait remarquer par exemple quelque bruit qu'on vient d'entendre, nous nous en souvenons, et nous nous appercevons d'en avoir eû tantôt quelque sentiment." (*Nouveaux essais*, preface) A VI, 6, p. 54; RB, p. 54.

[269] See G VI, p. 600 & 610.

[270] Marc Bobro makes a distinction between non-reflexive and reflexive memory (Leibniz termed the former *réminiscience* and for latter *souvenir*). The latter kind of memory includes the awareness that a certain memory is my memory, which the former kind of memory does not. See Bobro, *Self and Substance in Leibniz*, p. 23. It seems to me that the latter kind of memory is related to attention while the former kind is only related to sensation.

[271] NE I, i, §25

As mentioned above, attention is defined as reflection in general. However, in the preface to *Nouveaux essais* Leibniz stated that attention concerns "that what is in us."[272] Kulstad takes this to be evidence that it does not concern external images, and therefore noticing images would not count as reflection.[273] He argues that attention cannot concern mental images since reflection concerns only the soul and its affections. It is therefore to be understood in an image-excluding sense: external objects come to the soul in sensation and therefore they cannot be "in us."[274]

While it is clear that external objects are perceived through sensation, I believe that sensation and attention are closely related, and that there is a case for claiming that attention is related to mental images and reflection.

In *Nouveaux essais* II, xix, §1 Leibniz defined sensation as a state in which one is aware of an outer object. In other places, however, he defined it as perception with memory.[275] Assuming the latter is the usual meaning, the distinction between sensation and attention appears to be the following: while sensation concerns all outer objects, attention is limited to perceived objects and it concerns only some of those (heightened ones). For example, when attention is focused consistently, it is learning or study.[276] In the preface to *Nouveaux essais* Leibniz argued that attention serves to bring into our minds previous perceived events:

> "It would indeed be wrong to think that we can easily read these eternal laws of reason in the soul, as the Praetor's edict can be read on

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[272] See A VI, 6, p. 51.

[273] Kulstad, *Leibniz: Apperception, Consciousness and Reflection*, p. 126.

[274] Ibid. p. 122f.

[275] See PNG, §4 and in *La Monadologie*, §19. G VI, p. 600 & 610.

[276] "…c'est sensation lorsqu'on s'apperçoit d'une objet externe…Nous avons de l'Attention aux objets que nous distinguons et preferons aux autres. L'attention continuant dans l'esprit, soit que l'objet externe continue ou non, et même soit qu'il s'y trouve ou non, c'est consideration; la quelle tendant à la connoissance sans rapport à l'action, sera contemplation. L'attention dont le but est d'apprendre (c'est à dire d'acquerir des connoissances pour les garder) c'est Etude." (*Nouveaux essais* II, xix, §1) A VI, 6, p. 161.

> his notice-board, without effort or inquiry; but it is enough that they can be discovered within us by dint of attention: the senses give the occasion, and the results of experiments also serve to corroborate reason, somewhat as checks in arithmetic help us to avoid errors in calculation in long chains of reasoning."[277]

What exactly, then, are these objects of attention? It seems that they are not limited exclusively to clear and distinct ideas. A little later in the preface Leibniz stated: "This is how ideas and truths are innate in us – as inclinations, dispositions, tendencies, or natural potentialities, and not as actualities; although these potentialities are always accompanied by certain actualities, often insensible ones which correspond to them."[278]

This would imply that sensation is related to attention in the sense that perceived external objects may correspond to our innate ideas. The "certain actualities" that correspond to our "natural potentialities" would seem to act as motifs for our actions. How, then, is this correspondence to be understood? I think the answer is to be found in *Lettre touchant ce quie est independent des Sens et de la Matiere* (1702), in which Leibniz wrote:

> "Since therefore our soul compares the numbers and the shapes of colours, for example, with the numbers and shapes discovered by touch, there must be an internal sense where the perceptions of these different external senses are found united. This is called the imagination, which comprises at once the concepts of particular senses,

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[277] "Il est vray qu'il ne faut point s'imaginer, qu'on puisse lire dans l'ame ces éternelles loix de la raison à livre ouvert, comme l'Edit du Preteur se lit sur son album, sans peine et sans recherche; mais c'est assez qu'on les puisse decouvrir en nous à force d'attention; à quoy les occasions sont fournies par les sens, et le succés des experiences sert encore de confirmation à la raison, à peu prés comme les épreuves servent dans l'arithmetique pour mieux éviter l'erreur du calcul quand le raisonnement est long." (*Nouveaux essais*, preface) A VI, 6, p. 50; RB, p. 50.

[278] "C'est ainsi que les idées et les verités nous sont innées, comme des inclinations, des dispositions, des habitudes ou des virtualités naturelles, et non pas comme des actions; quoyque ces virtualitez soyent tousjours accompagnées de quelques actions souvent insensibles, qui y repondent." (*Nouveaux essais*, preface) A VI, 6, p. 52; RB, p. 52.

> which are clear but confused, and the concepts of the common sense, which are clear and distinct."[279]

Internal sense or imagination (which is not mentioned by either Kulstad, McRae or Jolley[280]) links together clear but confused perceptions with the common concepts.[281] The perceptions received from sensation are to be distinguished from the concepts of the common sense, and can be united only through the imagination. Whereas the former are at best clear and confused, the latter are clear as well as distinct. In *Nouveaux essais* IV, ii, §14 Leibniz stated: "And the linking of phenomena, which warrants the truths of fact about sensible things outside us, is itself verified by means of truths of reason, just as optical appearances are explained by geometry."[282]

In addition, there are the ideas of pure understanding, which are out of reach of the imagination:

> "There are…also objects of another nature, which are not at all included in what we have observed in the objects of either the particular senses or the common sense, and which consequently are also not to be considered objects of the imagination. Besides what is *sensible* and *imaginable*, therefore, there is that which is only *intelligible*,

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[279] "Comme donc nostre ame compare (par example) les nombres et les figures qui sont dans les couleurs, avec les nombres et les figures qui se trouvent par l'attouchement, il faut bien qu'il y ait un sens interne, où les perceptions de ces differens sens externes se trouvent reunies. C'est ce qu'on appelle l'imagination, laquelle comprend à la fois les notions des sens particuliers, qui sont claires mais confuses, et les notions du sens commun, qui sont claires et distinctes." G VI, p. 501; L, p. 548. See also *Nouveaux essais* II, xxix, §14.

[280] McRae discusses imagination in his later article *The Theory of Knowledge*, but he does not make any significant changes to his former view concerning apperception. McRae, *The Theory of Knowledge*, p. 181.

[281] Leibniz's conception of imagination was apparently traditional, as presented in Aristotle's *De Anima*, book III, ch. 3. In a memoir *De affectibus* he referred to it as simple understanding. A VI, 4, p. 1411.

[282] "Et la liaison des phenomenes, qui garantit les verités de fait à l'egard des choses sensibles hors de nous, se verifie par le moyen des verités de raison; comme les apparences de l'optique s'eclaircissent par la Geometrie." A VI, 6, pp. 374-75; RB, pp. 374-75.

> since it is the object of the understanding alone. And such is the object of my thought when I think of myself."[283]

Thus Leibniz made a strict distinction between sense, imagination and memory on the one hand, and pure understanding on the other.[284] Imaginable ideas are clear but confused perceptions that correspond to our innate ideas or principles. When some clear but confused sensation (such as the perception of harmony in a great work of art) grasps our attention, it corresponds to our innate ideas (a harmonious feeling is created and the moral instinct is aroused, which produces joy).[285] Self-consciousness, on the other hand, requires the ideas of pure understanding, in other words, clear and distinct ideas.

The objects of attention may be both clear and distinct ideas, and clear but confused ideas that correspond to some of our innate ideas through the imagination. The latter originate as mental images, which are refined into feelings that motivate us to act in a certain manner (for example, the feeling of perfection motivates us to act for the common good).

Feelings may also be harmful. If our understanding is not sufficiently developed (so that we cannot distinguish between real and apparent goods), our attention may be captured by harmful mental images (often related to our previous experiences) and, we may be misled into acting badly. We may think that the good in sensation contributes to our happiness, although it is harmful to it. Thus the imagination may both promote and harm our moral conduct. Leibniz described this kind of situation in *Nouveaux essais* II, xxi, §12:

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[283] "Il y a … encor des objets d'une autre nature, qui ne sont point du tout compris dans ce qu'on remarque dans les objets des sens en particulier ou en commun, et qui par consequent ne soint point non plus des objets de l'imagination. Ainsi outre le sensible et l'imaginable, il y a ce qui n'est qu'intelligible, comme estant l'objet du seul entendement, et tel est l'objet du seul entendement, et el est l'objet de ma pensée, quand je pense à moy même." G VI, p. 501; L, pp. 548-49

[284] See Hatfield, *The Cognitive Faculties*, pp. 977-80.

[285] I will return to this topic in Chapter 9.1.

> "Involuntary thoughts come to us partly from without, through objects' affecting our senses, and partly from within, as a result of the (often undetectable) traces left behind by earlier perceptions, which continue to operate and mingle with new ones. We are passive in this respect; and even when we are awake we are visited by images – which I take to include representations not only of shapes but also of sounds and other sensible qualities – which come to us unbidden, as in dreams. In German they are called *fliegende Gedanken*, meaning "flying thoughts"; they are not within our power, and they are sometimes full of irrationalities that provide upright people with moments of moral unease, and provide much work for casuists and directors of conscience…But our mind, on becoming aware of some image occurring in it, can say Stop! And bring it to a halt, so to speak."[286]

As I will argue in Chapter 10.3., we can develop our understanding and learn to focus on clear and distinct ideas. Even though we are passive with respect to mental images, we can guide our attention at will. While sensation and attention are closely related, only the latter is controlled by the moral agent.

While attention is reflection in general, the reflection of ourselves requires something more than sensation and attention:

> "This thought of myself, who perceives sensible objects, and of my own action which results from it, adds something to the objects of sense. To think of some colour and to consider that I think of it – these two thoughts are very different, just as much as colour itself

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[286] "…il nous vient des pensées involontaires, en partie de dehors par les objets qui frappent nos sens, et en partie au dedans, à cause des impressions (souvent insensibles) qui restent des perceptions précedentes, qui continuent leur action et qui se mêlent avec ce qui vient de nouveau. Nous sommes passifs à cet égard, et meme quand on veille, des images (sous les quelles je comprends non seulement des representations des figures mais encor celles des sons et d'autres qualités sensibles) nous viennent comme dans les songes, sans estre appellées. La langue Allemande les appelle *Fliegende gedancken*, comme qui diroit des pensées volantes, qui ne sont pas en nostre pouvoir, et où il y a quelques fois bien des absurdités qui donnent des scrupules aux gens de bien et de l'exercise aux casuistes et directeurs des consciences…Mais nostre esprit s'appercevant de quelque image qui luy revient, peut dire: halte là, et l'arrester pour ainsi dire." A VI, 6, p. 177; RB, p. 177.

> differs from the ego who thinks of it. And since I conceive that there are other beings who also have the right to say "I", or for whom this can be said, it is by this that I conceive of what is called *substance* in general. It is the consideration of myself, also, which provides me with other concepts in *metaphysics*, such as those of cause, effect, action and similarity, and even with those of *logic* and *ethics*. Thus it may be said that there is nothing in the understanding that has not come from the senses, except the understanding itself, or the one who understands."[287]

Thus self-consciousness is in the realm of pure understanding. While attention is a pre-condition of apperception, it cannot be apperception itself since it does not include self-consciousness. Although attention may be directed to some colour, it does not presuppose that the self is considering the colour. Apperception or self-consciousness proper requires the ideas of pure understanding that give rise to moral identity, which I will discuss in the next section.

As mentioned, attention may be captured by both clear and distinct ideas as well as by mental images that arise out of sensations through the imagination. It seems to me that apperception selects its objects from among the material which attention has picked up. Since apperception is said to require attention and order, it looks like it is not directly connected to sensation. On this hypothesis, the distinction between apperception and consciousness in *La Monadologie*, §14 and PNG,

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[287] "Cette pensée de moy, qui m'apperçois des objets sensibles, et de ma propre action qui en resulte, adjoute quelque chose aux objets des sens. Penser à quelque couleur et considerer qu'on y pense, ce sont deux pensées tres differentes, autant que la couleur même differe de moy qui y pense. Et comme je conçois que d'autres Estres peuvent aussi avoir le droit de dire moy, ou qu'on pourroit le dire pour eux, c'est par là que je conçois ce qu'on appelle la substance en general, et c'est aussi la consideration de moy même, qui me fournit d'autres notions de metaphysique, comme de cause, effect, action, similitude etc., et même celles de la Logique et de la Morale. Ainsi on peut dire qu'il n'y a rien dans l'entendement, qui ne soit venu des sens, excepté l'entendement même, ou celuy qui entend." G VI, p. 502; L, p. 549.

§4 may be understood as referring to the distinction between apperception and attention.

While I agree with McRae against the views of Jolley and Kulstad, I think Jolley is right in his claim that "It is difficult to find in Leibniz a clear picture of the relationship between consciousness and reflexive consciousness, and this may be a weakness in his philosophy of mind, which he shared with Descartes."[288] It is true that Leibniz did not offer one single clear indication of his views on this matter, but I believe that the reconstruction (the hierarchy of sensation, attention and apperception) I suggested above may provide the missing link Jolley is looking for.

4. 3. 4. Moral Identity and the Problem of Apperception in Animals

Apperception is also related to personal identity, which Leibniz discussed in the context of his criticism of Locke.[289] According to Locke, a later person is the same as an earlier one just because the former is conscious of some thought or action of the latter.[290] Thus recollection is the basis of personal identity.

Leibniz, however, considered personal identity to be based on the individual notion, which incorporates the history of the monad. As the example of Alexander showed, the individual notion includes traces of everything that has happened to him or her, and marks of everything that will happen in the future.[291] Only God, however, can completely conceive of this history.[292] This forms the *a priori* level of personal identity. The *a posteriori* level, the level of the consciousness of human beings, is explained in *Nouveaux essais* through the theory of minute perceptions that

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[288] Jolley, *Leibniz and Locke*, p. 109.

[289] On moral identity, see Scheffler, *Leibniz on Personal Identity and Moral Personality*.

[290] Locke, *Essay on Human Understanding* II, xxvii, §9, p. 335

[291] The notion of ideas persisting in the memory is similar to Descartes' theory of memory traces, which is discussed in a letter to Mersenne written on 18. 3. 1630 (AT I, pp. 133-34).

[292] See *Discours de metaphysique*, §8.

express the former states of the individual. In human experience, when there is no explicit memory of a past event, these minute perceptions may bring to mind some images of it, thus refreshing the memory and capturing the attention. For example, we might remember some smell or noise even though we cannot connect it to the actual events.[293] While these may wake up the attention as I have argued above, the real identity of the soul is constituted independently on the *a-posteriori* level of the complete individual notion.[294]

The moral identity of a spirit has to be seen against Leibniz's grading of monads on the scale of beings.[295] At the lowest level are bare entelechies, living things endowed with perception; above them are animal souls, endowed with perception and the capacity for sensation; and, finally, there are minds, which are capable of perception and sensation, but also of apperception, thought and reasoning. These higher monads are the most valuable, since they have not only physical, but also moral identity.[296] Moral identity

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[293] (*Nouveaux essais*, II, xxvii, §6 & 8)."Un Estre immateriel ou un Esprit ne peut estre depouillé de toute perception de son existence passée. Il luy reste des impressions de tout ce qui luy est autrefois arrivé, et il a même des présentimens de tout ce qui luy arrivera : mais ces sentimens sont le plus souvent trop petits pour pouvoir estre distinguez, et pour qu'on s'en apperçoive, quoyqu'ils puissent peutestre se developper un jour. Cette continuation et liaison de perceptions fait le même individu reellement, mais les apperceptions (c'est à dire lorsqu'on s'apperçoit des sentimens passés) prouvent encore une identité morale, et font paroistre l'identité reelle. (*Nouveaux essais* II, xxvii, §14) A VI, 6, p. 239; RB, p. 239.

[294] On the distinction between these two levels, see Thiel, *Personal Identity*, pp. 899-900.

[295] See McRae, *Leibniz: Perception, Apperception and Thought*, p. 27.

[296] "Je suis aussi de cette opinion, que la consciosité ou le sentiment du moi prouve une identité morale ou personelle. Et c'est en cela que je distingue l'incessabilité de l'ame d'un béte de l'immortalité de l'ame de l'homme: l'une et l'autre garde l'identité physique et reelle, mais quant à l'homme, il est conforme aux regles de la divine providence, que l'ame garde encore l'identité morale et qui nous est apparente à nous mêmes, pour constituer la même personne, capable par consequent de sentir les chatimens et les recompenses." (*Nouveaux essais*, II, xxvii, §9). A VI, 6, p. 236.

(which is founded on intelligible ideas and includes both self-consciousness and memory) renders them capable of choosing rationally and acting virtuously, in other words, they are able to distinguish good goals from bad ones, and to reflect predominantly on clear and distinct ideas. Thus they are able to enter the kingdom of the spirits, where they are the subjects of God, whose relation to them is like that of a father to his children.[297]

Jolley's and Kulstad's account of apperception would grant awareness to minute perceptions, and thus would in principle also grant reflexive cognition to animal souls. While Jolley does not discuss this possibility, Kulstad dedicates a large portion of his book to the subject. In his view, animals may have minimal apperceptions, that is they may have limited awareness, which does not presuppose clear and distinct perceptions.[298]

Although Kulstad was able to find some passages from Leibniz's later works that could be interpreted as supporting this view, I think this could be put down to carelessness in Leibniz's formulations rather than to a change in his thinking. In most of his writings he made it clear that apperception is not accessible to animals – as in this example from *Discours de Metaphysique*, §34:

> "...the principal difference is that they [animals] do not know what they are nor what they do, and consequently, since they do not reflect on themselves, they cannot discover the truths. It is also because they lack reflection about themselves that they have no moral qualities..."[299]

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[297] See *La Monadologie*, §84 and Leibniz's letter to Arnauld from 9. 10. 1687: "…c'est cette societé ou Republique generale des Esprits sous ce souverain Monarque, qui est la plus noble partie de l'univers, composée d'autant de petits Dieux sous ce grand Dieu." G II, p. 125. See also *Discours de metaphysique*, §12. For a discussion of the relationship between God and men in Leibniz, see Craig, *The Mind of God and the Works of Men*, p. 51f.

[298] Kulstad, *Leibniz on Apperception, Consciousness, and Reflection*, pp. 170-72.

[299] "…la principale difference est, qu'elles ne connoisent pas ce qu'elles sont, ny ce qu'elles font, et par consequent ne pouvant faire des reflexions, elles ne sçauroient decouvrir des verités. C'est aussi faute de reflexion sur elles mêmes, qu'elles n'ont point de qualité morale…" A VI, 4, p. 1583; AG, p. 65

It seems clear that Leibniz was referring here to the distinction between sensible, imaginable (which he also described as both sensible and intelligible[300]) and merely intelligible ideas. Animals may have sensations, but the level of self-reflection is independent of sensible ideas, and for this reason it is inaccessible to animals. In his preface to *Nouveaux essais* he called them empirics, in contrast to men who are able to engage in reasoning.[301]

> "But true reasoning depends on necessary or eternal truths, much as those of logic, numbers and geometry, which bring about an indubitable connection of ideas and unavoidable consequences. Animals in which these consequences are not noticed are called beasts; but those who know these necessary truths are those that are properly called rational animals, and their souls are called minds. These souls are capable of performing reflective acts, and capable of considering what is called "I", substance, soul, mind – in brief, immaterial things and immaterial truths. And that is what make us capable of the sciences or of demonstrative knowledge "[302]

Thus animals cannot have apperceptions, at least in the demanding sense. Where does this leave Kulstad's minimal apperceptions, then? According to him, minimal apperceptions in animals are similar to Locke's concept of sensation, in other words, being aware of an outer object.[303] He argued that simple apperceptions do not need reasoning in the sense of deduction or

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[300] See G VI, p. 502.

[301] See A VI, 6, pp. 49-50.

[302] "Mais le raisonnement veritable depend des verités necessaires ou éternelles, comme sont celles de la Logique, des Nombres, de la Geometrie qui font la connexion indubitable des idées, et les consequences immanquables. Les animaux, où ces consequences ne se remarquent point, sont appelès Bêtes; mais ceux qui connoissent ces verités necessaires, sont proprement ceux qu'on appelle Animaux Raisonnables, et leur ames sont appallées Esprits. Ces Ames sont capables de faire des Actes reflexifs, et de considerer ce qu'on appelle Moy, Substance, Ame, Esprit, en un mot, ces choses et les verités immaterielles. Et c'est ce qui nous rend susceptibles des Sciences ou des connoissances demonstratives. (*Principes de la nature et de la grace, fondés en raison*, par. 5) G VI, pp. 600-01; AG, p. 209.

[303] See Locke, *An Essay Concerning Human Understanding* II, i, 3.

composition, and his claim is thus that sensation could be understood as identical to (minimal) apperception.[304]

I doubt it. As already mentioned, Leibniz often defined the notion of sensation as perception together with memory. Furthermore, it concerns outer objects in general, and attention concerns certain perceptions that are heightened. Even minimal apperceptions as Kulstad refers to them seem to require more than the mere sensation of everything external to the animal soul, in other words, a heightened sensation.

Leibniz also postulated that apperception required attention and order. It is clear that sensation, when understood as perception from memory, does not include order in the sense that reason is used to order thoughts. However, as sensation is closely linked with memory in animal souls, I think it could be assumed that some kind of mental operation resembling attention in humans is possible for animals, although Leibniz did not explicitly discuss this. In my view, attention is a less misguided term for animals than apperception, which Leibniz related directly only to human cognition.

Leibniz often used the example of a stick that is noticed and feared by a dog because it remembers that it has been beaten with it before.[305] I believe this kind of noticing could be called attending – it requires perception and memory, in other words, sensation. The noticing, however, is clearly not reflexive knowledge in a self-conscious sense, but is more of a pseudo-reasoning or reacting to a past experience, as Leibniz noted in *Nouveaux essais*.[306]

In fact, he attributed this kind of behaviour to imagination in *La Monadologie*, §27. Imagination in animals is naturally different from human imagination since animals have no innate ideas: their imagination is more like linking together of confused sensations.[307] When a former experience is linked with a present sensation, the animal might attend and react to it. Attending to it does not rise to

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[304] Kulstad, *Leibniz on Apperception, Consciousness, and Reflection*, p. 162.
[305] See, for example, *La Monadologie,* §26-27.
[306] See preface (A VI, 6, p. 51), in which Leibniz called it a shadow of reasoning.
[307] See *Nouveaux essais* II, xi, §11.

the level of apperception, however, because animals lack moral identity.

For these reasons I find it hard to believe that sensation is linked directly to apperception, even in the less demanding sense. I consider it more feasible to assume that animals are capable of attention in the sense of general reflection. However, Kulstad cites the following persuasive passage from *Nouveaux essais* II, xxi, §5, in which Leibniz stated:

> "Beasts have no understanding…although they have the faculty for apperceiving [s'appercevoir] the more conspicuous and outstanding impressions – as when a wild boar is aware of someone who is shouting at it, and goes straight at that person, having previously had only a bare perception of him, a confused one like its perceptions of all the objects that stand before its eyes and reflect light-rays into the crystalline lens."[308]

I suggest that this passage could be taken to refer to attention in the sense explained above. When the man shouts at the boar the event stands out to it because the sensation is linked through its imagination to a former sensation that it remembers. It is for this reason that the boar attends to the shouting person. Although Leibniz used the term "faculty of apperceiving", from his description of the event it seems to me that the boar was closer to attending something than actually apperceiving it, in other words, a state of being conscious of perceiving it.[309]

Kulstad, however, argues that it is not easy to see how a perception could be distinct enough so as to attract memory and attention (as seems to be the case with sensation) without it being

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[308] "…les bestes n'ont point d'entendement…quoyque elles ayent la faculté de s'apercevoir des impressions plus remarquables et plus distinguées, comme le sanglier s'apercevoir des impressions plus remarquables et plus distinguées, comme le sanglier s'apperçoit d'une personne qui luy crie, et va droit à cette personne, dont il n'avoit eu déjà auparavant qu'une perception nue, mais confuse comme de tous les autres objets, qui tomboient sous ses yeux, et dont les rayons frappoient son crystallin." A VI, 6, p. 173; RB, p. 173.

[309] In this I agree with Émilienne Naert. See Naert, *Mémoire et conscience de soi selon Leibniz*, p. 78.

correct to say that a second-level, reflective activity had taken place.[310] He is right, but I think it is quite consistent to hold that the confused perceptions of an animal are linked through the (animal) imagination, and in this case the second-level activity is not required.

In sum, I consider apperception to be more than merely being aware of something. It is related to innate ideas, and in this way to moral identity. It distinguishes men from animals, since it is only possible for the former.

5. An Analysis of Contingent Truths

Although human cognition is clearly superior to animal cognition, we are unable to analyse all the contingent facts in the world. This requires the infinite analysis of propositions into the axioms or truths of reason, which is only possible for God. As Leibniz stated in *De Synthesi et Analysi universali seu Arte inveniendi et judicandi* (1679?): "God understands everything *a priori* and through eternal truths, since he does not need experience and knows all things adequately, whereas we know hardly anything adequately, few things *a priori*, and most things through experience..."[311]

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[310] Kulstad, *Leibniz on Apperception, Consciousness, and Reflection*, p. 41.

[311] "Quo modo omnia inteliguntur a DEO a priori et per modum aeternae veritatis, quia ipsi experimento non indiget, et quidem ab illo omnia adaequate, a nobis vix ulla adaequate, pauca a priori, pleraque experimento cognoscuntur..." (*De Synthesi et Analysi universali seu Arte inveniendi et judicandi*) G VII, p. 296, L, p. 232. Almost ten years later the tone is similar: "Quaeritur an experimenta resolvi possint in alia experimenta in infinitum, et omissa mentione experimentorum an possibile sit <quandam probationem esse talem ut comperiatur > propositionis probationem <semper> praesupponere probationem alterius propositionis, quae non sit axioma nec definitio, adeoque rursus indigeat probatione. Unde et necesse est terminos quosdam incomplexos continuè ita resolvi posse, ut nunquam deveniatur ad per se conceptos. Alioqui resolutione absoluta apparebit utrum coincidentia virtualis fiat formalis seu expressa sive an res redeat ad identicam." (*Generales inquisitiones de analysi notionum et veritatum*, 1686) O, p. 373; P, p. 63.

Nevertheless, man must develop a way to find as certain knowledge as possible in order to make as good decisions as possible. This is needed in all human action: the law, politics, ethics, canon law, medicine, economics, science and so on. According to Leibniz's vision, the increasing degree of certainty of knowledge leads us closer to God, whose creations we are in a better position to understand. The more we know about God's work, the more we honour and love Him. Moreover, by achieving more certain knowledge we can promote the process of increasing perfection, which is for the good of all and produces pleasure for those of us who promote it.[312]

In order to do that, we must try to develop our reasoning. Since our understanding does not penetrate complete individual notions of substances, we have to build our knowledge mostly on experience. Leibniz discussed the problems of human reasoning in his preface to the Italian humanist Marius Nizolius' 1533 work *Anti-Barbarus, seu de veris principiis et vera ratione philosophandi contra pseudophilosophos* (1670). He rejected simple enumerative induction, since it would not increase our knowledge: one cannot experience everything – there always remain innumerable, individual cases that contradict the universal proposition.[313] We may observe a thousand similar cases, but the next case could be an exception to the rule.

Leibniz developed his methods of reasoning in natural sciences in his *Praefatio ad libellum elementorum physicae* (1678-79). He recommended the drawing up of an inventory of experiments to make it possible by a process of combinatorics to combine the

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[312] On Leibniz's pansophism, see Manuel & Manuel, *Utopian Thought In The Western World*, ch 15.

[313] "Nam nunquam constitui possunt ea ratione propositiones perfecte universales, quia inductione nunquam certus es, omnia individua a te tentate esse, sed semper intra hanc propositionem subsistes, omnia illa quae expertus sum sunt talia; cum vero non possit esse ulla ratio universalis, semper manebit possibile, innumera quae tu non sis expertus, esse diversa." (*Marii Nizolii de Veris Principiis*…) G IV, p. 161.

results of these experiments for useful application through simple reflection.[314] I will return to the notion of combinatorics below.

Another method of analysing the results of experiments is to use geometric analysis or calculus, but this involves a long chain of reasoning and thus requires a lot of thought. This *a priori* method shows that some structure of nature is derived from the known nature of God, thus we can explain sensible things. This form of reasoning is extremely difficult and is meant for superior minds.[315]

The main task of the analysis of contingent truths is to show that in all true propositions the concept of the predicate is included in that of the subject. The analysis is thus similar to that of necessary truths, except that it is infinite. Some time around 1686 Leibniz came to the conclusion that this analysis was only possible for an infinite mind that was God: He sees the predicates of each complete individual notion and, through them, can see all the states of all substances.[316] We can achive only probable knowledge of these truths.

> "A true contingent proposition cannot be reduced to identical propositions, but is proved by showing that if the analysis is continued further and further, it constantly approaches identical propositions, but never reaches them. It is God alone, who grasps the entire infinite in His mind, who knows all contingent truths with certainty."[317]

A less demanding method of analysis, as Leibniz argued in *Praefatio*, is conjectural *a priori* reasoning, which "proceeds by hypotheses, assuming certain causes, perhaps, without proof, and showing that things that happen now would follow from these

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[314] A VI, 4, pp. 1997-98. Leibniz mentioned as examples mortar (gunpowder) and the chronometer (the application of the equality of pendulum vibrations).

[315] A VI, 4, p. 1999.

[316] Parkinson, *Philosophy and Logic*, pp. 203-204.

[317] (134) "Propositio vera contingens non potest reduci ad identicas, probatur tamen, ostendendo continuata magis magisque resolutione, accedi quidem perpetuo ad identicas, nunquam tamen ad eas perveniri. Unde solius Dei est, qui totum infinitum Mente complectitur nosse certitudinem omnium contingentium veritatum" (*Generales inquisitiones de analysi notionum et veritatum*, 1686) A VI, 4, p. 776; P, p. 77.

assumptions."[318] The simpler the explanation is and the more phenomena it explains the more probable it is. The certainty of this kind of explanation is not absolute, and it should be taken only as probable. However, it is sufficient for everyday use, for "some hypotheses can satisfy so many phenomena, and so easily that they can be taken for certain. Among other hypotheses, those to be chosen are the more simple; these are to be presented, in the interim, in place of true causes."[319] We can build our knowledge on this foundation provided that we make a distinction between the certain and the probable, and replace hypotheses with better ones as they emerge.[320] The bottom line, however, is that there seems to be no way for humans to demonstrate contingent facts – it requires God's infinite understanding.

Leibniz also discussed conjectural reasoning *a posteriori*, basing his arguments mostly on analogies and dealing with the results of experiments. He warned against the careless use of analogies, which could lead to grave mistakes. Rightly used, however, they prove very useful in inductions.[321]

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[318] "Methodus conjecturalis a priori procedit per Hypotheses, assumendo quasdam causas licet sine ulla probatione, atque ostendendo quod ex illis positis ea quae nunc contingunt, sint eventura." A VI, 4, p. 1999; L, p. 283. The concept conjectural (*conjectura*), which is used systematically in *Praefatio ad libellum elementorum physicae*, appears frequently both in Leibniz's jurisprudential texts and also in more philosophical ones (see index to the *Akademie* edition at http://www.bbaw.de/bbaw/Forschung/Forschungsprojekte/leibniz_potsdam/bilder/sachregister.pdf). Thus it cannot be limited to the reasoning of natural philosophy. Given the text was meant as a part of Leibniz's grand project of *Catholic demonstrations* (A VI, 1, p. 494), it could be seen to represent a systematic presentation of his views on reasoning.

[319] "Hypotheses aliquae tam multis phaenomenis et tam facile satisfacere possunt, ut haberi queant pro certis. Ex aliis eligendae sunt simpliciores et interim adhibendae loco verarum causarum." A VI, 4, p. 1999; L. p. 283. As shown in Chapter 2.4.2., the term simple laws should not be taken literally – it refers to most determinate laws in an architectonic sense.

[320] Ibid.

[321] Ibid., pp. 2000-2001. However, as Stuart Brown points out, conjectural reasoning *a priori* is, in fact, reasoning *a posteriori*, since it assumes causes that are based on experience. Thus reasoning by experience can lead to the

Marcelo Dascal introduces a new concept in Leibniz, "soft reason" (*Blandior ratio*), which has recently provoked a lot of discussion.[322] According to Dascal, this weaker form of reasoning, which incorporates forgiveness and persuasiveness, is typical in humans.[323] He argued that the Leibnizian or "hard" ideal of science has to be complemented by other means, which are not as certain but can help us in our everyday activities, and mentions observation, experience, approximation, hypothetical generalisation and probability as examples.[324] These methods of soft reasoning help us to find a way through the jungle of contingent truths. Thus Dascal holds that applying soft reason is common in Leibniz's views on practical rationality.

According to Dascal, "hard" and "soft" reason are both needed. When we are unable to apply the "hard" variety, we have to find a

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same truth as *a priori* reasoning. See Brown, *Ex pluribus unum: Reason, Experience and Revelation as Alternative Sources of Truth for Leibniz*, pp. 112 & 117.

[322] See, for example, Dascal's and Heinrich Scheper's discussion in the *Leibniz Review* 14.

[323] Dascal, *Nihil sine ratione → Blandior ratio*, p. 276. The term *blandior* (forgiving) is used in O, p. 34, in connection with mathematical reasoning. Leibniz did not use it as a technical term in his writings. Heinrich Schepers argues convincingly that the expression *blandior* refers to the manner of argumentation, and that Leibniz was advising mathematicians to present their results in more agreeable manner. See Schepers, *Non alter, sed etiam Leibnitinius*, pp. 131-32. In a recent conference Leibniz: What Kind of Rationality (Tel Aviv & Jerusalem, 30. 6. – 2. 6. 2005) Schepers argued in his paper "A Plea for Leibniz's "Radical Rationality" (forthcoming) that he used "softer" methods in order to communicate his ideas to his contemporaries. While this may be true, it is also evident, as I will show in Part III of this study, that the "softer" ways of reasoning are usually only implicit in his writings while the demand for rigid reasoning is frequently voiced. This seems to confirm the hypothesis that Leibniz used the "softer" kind as provisionary methods when rigid reasoning was not possible. Moreover, I do not agree with Schepers claim that "soft" reasoning is comparable to the methods of the empiricists – when we think of estimating the consequences of a given act, for example, the estimation is only partly founded on experience.

[324] Dascal, *Nihil sine ratione → Blandior ratio*, p. 278.

less demanding alternative and try to reach some moral certainty that works as a kind of presumptive, provisional truth.[325] To my mind, "soft" reasoning is similar to Leibniz's conjectural reasoning, discussed above. Be that as it may, I think Dascal is right in arguing that there were two sides to Leibniz's reason, whether they are called "hard" and "soft", or "demonstrative" and "conjectural", or something else.

However, I think Heinrich Schepers is also right in arguing that these two kinds of reasoning are applicable to different kinds of cases. While demonstrative reasoning has to do with truths of reason, soft reasoning is related to truths of fact, and is to be applied in cases involving contingent truths and empirical knowledge.[326] Dascal appears to allow this: "soft" rationality is to be used in situations – both theoretical and practical – in which uncertainty and imprecision are the rule.[327]

Like Dascal, I believe that these two different forms of reasoning work side by side. "Soft" reason replaces "hard" reason when the latter is unable to function. Living up to his famous metaphor of God as an architect who finds a suitable solution for each construction, Leibniz applied suitable reasoning to the problems he encountered.[328]

Practical and moral deliberations are paradigm cases of soft reasoning, as I will show in Chapters 8-10. Many deliberations defy estimation even in terms of probabilities. In these cases we have to content ourselves with the argument that one option is (after careful consideration) more defensible or reasonable or acceptable or probable than another – it could then be regarded as

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[325] For a discussion of soft reason, see Dascal, *Nihil sine ratione → Blandior ratio*.

[326] Schepers, *Non alter, sed etiam Leibnitinius*, p. 125. The discussion in *Praefatio ad libellum elementorum physicae*, in which the term conjectural is used, is clearly related to empirical facts.

[327] Dascal, *Dialectics in the 'hard vs. 'soft' rationality debate*, a talk given in Leibniz, What Kind of Rationalist?, Tel Aviv and Jerusalem, 30. 5. – 2. 6. 2005 (forthcoming).

[328] On God as an architect, see *La Monadologie,* §87 and *Discours de metaphysique*, §3.

a morally certain assumption (presumption), which gives a sufficient reason to choose it over some other option.[329]

The concept of moral certainty was also used by Descartes, who, although generally critical of probability discussions and especially those instigated by the casuists, discusses it at the end of *Principia philosophiae* (§205): [330]

> "It would be disingenuous, however, not to point out that some things are considered as morally certain, in other words, as having sufficient certainty for application to ordinary life, even though they may be uncertain in relation to the absolute power of God."[331]

Although Leibniz also developed this kind of "softer" reasoning, he never wavered in his ideal of establishing a *scientia generalis* that would enable us to apply "hard" reasoning to everything, in other words, to attain demonstrative knowledge. This would include not only theoretical sciences, but also moral and political deliberations. Once we have more reliable information available for "hard" reasoning we should base our judgement on firmer grounds. In order to reach demonstrative certainty we must show that the

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[329] "…plusieurs argumens probables joints ensemble font quelque fois une certitude morale, et quelques fois non." (a letter to Burnett 1. 2. 1697, G III, p. 194). The concept of moral certainty, meaning a high degree of probability, was first introduced by Jean Gerson around 1400, and it means a very high but not complete degree of persuasion. Gerson was apparently referring to Aristotle's remark that ethics was less certain than mathematics. Franklin, *The Science Of Conjecture*, p. 69.

[330] However, in his strict analysis Leibniz was more demanding than Descartes: "Analytica seu ars juricandi, mihi quidem videtur duabus ferè regulis tota absolvi : 1) ut nulla vox admittatur, nisi explicata. 2) ut nulla propositio, nisi probata. Quas arbitror longè absolutiores esse, quàm quatuor illas Cartesianas in Prima Philosophia, quarum primaria est, quicquiod claré distinctèque percipio, illud est verum quae infinitis modis fallit." (*Nova methodus discendae docendaeque jurisprudentiae*). A VI, 1, pp. 279-80; L, p. 88. On Descartes' views on probability, see Franklin, *The Science of Conjecture*, pp. 218-222.

[331] "Sed tamen, ne qua hic veritati fraus fiat, considerandum est quaedam esse quae habentur certa moraliter, hoc est, quantum sufficit ad usum vitae, quamvis si ad absolutam Dei potentiam referantur, sunt incerta." AT IX, p. 327; CSM, p. 290.

relations between truths of fact are probable in the demanding sense. With his schemes for a probability calculus Leibniz had high hopes that soon proved to be unfounded, as I will show in the next chapter.

In addition to observable entities, Leibniz also allowed for entities that did not exist, "fictions" as he called them. He wrote in a letter to Conti concerning criticisms of Newton's metaphysics that when the data happened to be insufficient, it was permissible to imagine hypotheses (including these fictitious entities), to wait until experiments brought out new data and until the "crucial" experiment clarified the choice of hypothesis.[332] This kind of hypothetical reasoning is comparable to Leibniz's use of jurisprudential fictions, which are rhetorical devices comparable to presumptions.[333]

Thus Leibniz's scientific reasoning seems to apply what is known nowadays as the hypothetico-deductive method.[334] Through new experiments and observations we can develop better scientific theories that are more probable than the old ones. Whether they are true we will never know, but a standard of moral certainty is achieved.[335] Leibniz seemed to be confident that human knowledge would get very near to divine perfect knowledge without ever reaching it.

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[332] Cited in Koyré and Cohen, *Newton & Leibniz-Clarke Correspondence*, p. 78.

[333] For a discussion of fictions in jurisprudence, see Parmentier, *Concepts juridiques et probabilistes chez Leibniz*, p. 460f.

[334] See Rescher, *Leibniz's Metaphysics of Nature*, p. 26 and Gale, *Is Leibniz Really a Rationalist?*, p. 399.

[335] "C'est pour cela que les Geometres ont tousjours jugé ce qui ne se prouve que par induction ou par les exemples en Geometrie ou en Arithmetique, n'est jamais parfaitement prouvé…Cependant quand on l'auroit experimenté cent mille fois, en continuant le calcul bien loin, on peut bien juger raisonnablement que cela reussira tousjours; mais on n'en a point pour cela de certitude absolue, à moins qu'on n'en apprenne la raison demonstrative, que les Mathematiciens ont trouvée il y a longtemps." (*Lettre touchant ce qui est independent des Sens et de la Matiere à Sophie Charlotte*). G VI, p. 504-05; L, p. 550.

As shown, Leibniz's main criticism of induction was based on the fact that it did not promote new knowledge. He thus developed the art of combinations, as he called it, in his dissertation *De Arte Combinatoria* (1666), which works by combining simple terms or results of experiments. The concepts are analysed down to their most simple parts and thus the "alphabet of human thought" is established. It is through this that we can combine everything we need.[336] Leibniz's inference from these simple terms showed traces of Aristotelian syllogism, but he considered it insufficient.[337]

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[336] "In Philosophia habe ich ein mittel funden, dasjenige was Cartesius und andere per Algebram et Analysin in Aritmetica et Geometria gethan, in allen scientien zuwege zu bringen per Artem Combinatoriam, welche Lullius und P. Kircher zwar excolirt, den weiten aber in solche deren intima nicht gesehen. Dadurch alle Notiones compositae der ganzen welt in wenig simplices als deren Alphabet reduciret, und aus solches alphabets combination wiederumb alle Dinge, samt ihren theorematibus, und was nur von ihnen zu inventieren müglich, ordinata methodo, mit der zeit zu finden, ein weg gebahnet wird. Welche invention, dasern sie wils Gott zu werd gerichtet, als mater aller inventionen von mir vor das importanteste gehalten wird, ob sie gleich das ansehen noch zur zeit nicht haben mag. Ich habe dadurch alles was erzehlet werde soll, gefunden und hoffe noch ein mehrers zu wege zu bringen." (Leibniz to Duke Johann Friedrich, date unknown) G I, pp. 57-58. In a letter to Conrig (several years later), he wrote: "Multa in his rebus habeo pulchra quae speciminibus etiam elegantibus illustrare possem si satis otii esset." (A letter to Herman Conrig, 1678). G I, p. 195; L, pp. 187-8.

[337] "Zwar ist diese arbeit des Aristotelis nur ein anfang und gleichsam das ABC, wie es dann andere mehr zusammengefäste und schwehrere formen gibt die man alsdann erst brauchen tan, wenn man mit hilff dieser ersten und leichten formen festgestellt…" (A letter to Gabriel Wagner, date unknown), G VII, p. 519. In syllogistics Leibniz used 24 moods (four figures of syllogism, each with six moods) instead of the traditional 14 moods. Kneale & Kneale, *The Development of Logic*, pp. 322 & 326; Burkhardt, *Logik und Semiotik in der Philosophie von Leibniz*, p. 51. Sometimes Leibniz also tried to combine numerical values with it, see *Regulae ex quibus de bonitate consequentiarum formisque et modis syllogismorum* <*categoricorum*> *judicari potest, per numeros* (April, 1679) in O, p. 77.

The synthesis in *De Arte Combinatoria* proceeds as follows: each composed term is a combination of simple terms that are represented by corresponding numbers or signs, which at the same time express their definitions.[338] Analogous to this is the arithmetical process of decomposing of given numbers.[339] Leibniz's system offered a way of finding all the possible logical predicates in the subject since they could easily be identified through the definition of signs or numbers. The only problem is that in order to compose combinations of simple terms, we must find the predicates: we must analyse the proposition in question into truths of reason, i.e. identicals.

It was for this purpose that Leibniz tried to develop a new logic, which he called *logica inventiva*, the logic of discovery.[340] The idea first appears in *De arte combinatoria* and is a leading motif in his later writings on logic.[341] Sometimes he also called this new logic *ars inveniendi*, the art of invention. The synthesis is complemented with different tools of invention such as maps, schemes, models, examples and imagination. The goal of the logic of discovery is to combine all the knowledge in the world and to produce new knowledge for the common benefit of mankind and God's glory. The practical goal is to find all true propositions in which a given concept is included as either subject or predicate. If

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338 Couturat, *La logique de Leibniz*, p. 40. For a detailed study of Leibniz's combinatorics, see Burkhardt, *Logik und Semiotik in der Philosophie von Leibniz*.

339 For example, the number 210 can be expressed as 42 x 5, 6 x 35, 14 x 15 and so on. When these components are decomposed, we get 2 x 3 x 5 x 7. Thus we have 2, 3, 5, 7. In *De Arte Combinatoria* the synthesis proceeds as follows: the numbers are combined together as: 2,3, 2,5, 2, 7, 3,5, 3,7, 5,7., then 2,3,5, 2,3,7 2,5,7, 3,5,7. Finally, we get to 2,3,5,7, which is 210.

340 According to Hacking, Leibniz anticipated this inductive logic, which was developed in the 1920's by J. M. Keynes, Harald Jeffreys and Rudolf Carnap. Hacking, *The Emergence of Probability*, p. 134.

341 For example, *Plus ultra - Initia et Specimina Scientiae novae Generalis*, written under the pseudonym *Guilelmi Pacidii*, G VII, p. 43f or *De la sagesse*, in which Leibniz gave ten maxims for *ars inveniendi*, G VII, p. 82f.

the subject is given the task is to find all the predicates, and if the predicate is given it is to find all the possible subjects.[342]

Logica inventiva or *ars inveniendi*, combined with the art of demonstration (*ars demonstrandi*), which is based on syllogistics as described above, forms the *scientia generalia*, the general science that will reveal to us the secrets of nature.[343] This general science would be developed into a deductive encyclopaedia with the co-operation of scientists.[344] Its instrument comprises *characteristica universalis*, universal characteristics that are essentially a result of the analysis of human knowledge in primal terms.[345] Thus we find that *scientia generalis* uses both analysis and synthesis. In fact, as Leibniz himself observed on one occasion, it is equivalent to logic.[346]

Leibniz's optimism in this regard shows in the fact that, although he understood that the perceptions of the spirits were often confused and could not reach higher levels, he thought – at least before 1686 - that the primary concepts could eventually be found and by this means general science would serve as the ultimate guide for rational decision-making. In controversial cases the opponents could simply calculate the right answer by weighing up clearly defined reasons.[347]

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342 Of the Art of Invention, see Van Peursen, *Ars inveniendi bei Leibniz*.

343 Kauppi, *Über die Leibnizsche Logik*, p. 15.

344 On the encyclopaedia, see Couturat, *La logique de Leibniz*, p. 119f.

345 See Peckhaus, *Logik, Mathesis universalis und allgemeine Wissenschaft*, p. 31f.

346 O, p. 556. See also Kauppi, *Über die Leibnizsche Logik*, p. 28.

347 "Modum ergo tradere aggredior, quo semper homines ratiocinationes suas in omni argumento ad calculi formam exhibere controversiasque omnes finire possunt, ut non jam clamoribus rem agere necesse sit, sed alter alteri dicere possit: calculemus." (*Guilielmi Pacidii initia et specimina Scientiae generalis*) G VII, p. 125. For an example of Leibniz's drafts on this kind of calculating, see *Calculus consequentiarum* in O, pp. 84-89. In a memoir *De numeris characteristicis ad linguam universalem constituendam* Leibniz argued that once the arguments are reduced to numbers the reasons can be weighed as if by a kind of statistics." (A VI, 4, 269). Thus it would seem that calculating reasons is a kind of weighing between them, albeit in an exact, quantative manner. See Milkov, *A New Interpretation of Leibniz's Concept of characteristica universalis*, p. 607. See also Chapter 11. 2.

Leibniz soon realized that his vision was too optimistic. The project of general science encountered the same problem as the related project of the universal language: the work would require the analysis of all contingent truths into simple concepts, which proved to be too enormous a task for one man. He planned to leave it to a host of scientists in co-operation with scientific academies. However, a complete analysis would require *scientia generalis* – this fact had been observed by Descartes in a letter to Mersenne in 1629.[348] Leibniz wrote in the margin of his copy of Descartes'correspondence, beside this letter, as follows:

> "...although this language depends on the right philosophy, it does not depend on its perfection. In other words, this language can be established although the philosophy is not perfect: and as much as human science is believable, this language is also believable. "[349]

Leibniz's optimism concerning both the perfection of general science and notion of a universal language proved to be ill-founded. As the case studies on calculating and assessing probability described in the next chapter and those on human rational decisions in the third part of the study show, it is clear that in most practical cases decisions have to be made under uncertainty.

6. The Theory of Probability

As I have shown, Leibniz was keen to find new ways of dealing with contingent truths: since our understanding is finite, it would be of extreme importance to develop methods for calculating or at least estimating degrees of probability which is often defined as a branch of mathematics that measures the likehood that an event will occur. In 1679 he wrote to Johann Friedrich:

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[348] AT I, p. 78-82.

[349] "...quoyque cette langue depende de la vraye philosophie, elle ne depend pas de sa perfection. C'est à dire cette langue peur estre établie, quoyque la philosophie ne soit pas parfaite: et à mesure que la science des hommes croistra, cette langue croistra aussi." O, p. 28.

> "…a new logic is needed in order to know degrees of probability, since this is necessary in judging the proofs in matters of fact and morals, where there are unusually good reasons on both sides and we are concerned only to know on which side to tip the scales. But the art of weighing probabilities is not yet explained at all, although it would be of great importance in matters of justice and even in the management of business."[350]

Estimating probability became an important part of Leibniz's theory of rational decision-making, and it could be regarded as an original feature in his views on deliberation. The probability or "new logic" he was referring to was developed within jurisprudence, but it could serve many other sciences, as he argued in a letter to Burnett:

> "…practical philosophy is founded on the true Argument or Dialectics – that is to say, on the art of estimating degrees of proof, which has not yet been found among authors who are Logicians and of which only the Jurists have given examples that are not to be despised and that could serve as the start of a science of proofs, suitable for verifying historical facts and for giving the meaning of texts."[351]

The theory of probability was a major project for Leibniz throughout his life. His most extensive discussion of the subject

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[350] "…il faut une nouvelle logique, pour connoistre les degrés de la probabilité, puisque cela est necessaire pour juger des preuves en matieres de fait, et de morale, ou il y a ordinairement des bonnes raisons de part et d'autre, et il ne s'agit que de sçavoir de quel costé doit pancher la balance. Maist l'art de peser les probabilités ne se trouve encor expliquée nulle part, quoyqu'elle soit de grande importance en matiere de droit, et mêmes pour le maniment les affaires." A II, 1, p. 489.

[351] "…la Philosophie pratique est fondée sur la veritable Topique ou Dialectique, c'est à dire, sur l'art d'estimer les degrés des probations qui ne se trouve pas encor dans les auteurs Logiciens, mais dont les seuls Jurisconsultes ont donné des echantillons qui ne sont pas à mepriser, et peuvent servir de commencement pour former la science des preuves, propre à verifier les faits historiques, et pour donner le sens des textes." (Letter to Burnett 1. 11. 1697) G III, pp. 193-94; Adams, *Leibniz: Determinist, Theist, Idealist*, p. 199.

occurs in his late work *Nouveaux essais*, in which he lamented the continuing lack of a proper logic of probability:

> "I maintain that the study of the degrees of probability would be very valuable and is still lacking, and this is a serious shortcoming in our treatises on logic."[352]

6. 1. Classic Probability Theory

In his well-known book, *The Emergence of Probability*, Ian Hacking argues that the birth of "modern probability", often labelled "classical probability", took place in the middle of the 17th century, around 1660, and that it could be divided into two classes:[353]

> 1) statistical probability, which concerns the stochastic laws of chance processes, and
> 2) epistemological probability, which is dedicated to assessing reasonable degrees of belief in propositions that are independent of statistical calculation

The latter kind, known in medieval times as opinion or belief, merged with the former, aleatory probability and the combination of these two is the concept we nowadays recognise as probability.

Statistical probability has to do with different ways of measuring, assessing and calculating frequencies and statistical

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[352] "…je tiens que la recherche des degrés de probabilité, seroit trés importante, et nous manque encor, et c'est un grand defaut de nos Logiques." (*Nouveaux essais* IV, ii, §14) A VI, 6, p. 372; RB, p. 372.

[353] Hacking, *The Emergence of Probability*, pp. 11-12. As reasons Hacking mentions Huyguens' first textbook (*De rationis in ludo alea*, 1657), Pascal's wager summarised in 1662 at the end of *L'Art de penser* (The Port-Royal Logic), Leibniz's *De arte combinatoria*, Jan de Witt's and John Wilkins' experiments on annuities and John Graunt's statistical inferences from mortality records. Sven Knebel has argued that the development of probability was the third main trend of the "mathematical revolution" of the 17th century, the other two being classical mechanics and the calculus. Knebel, *Wille, Würfel und Wahrscheinlichkeit*, p. 41.

occurrences (for example, throwing a dice). It was used in aleatory contracts, insurance, and demographics by Graunt, and for calculating annuities for financing public business.[354]

Epistemological probability was related to assessing the degrees of belief in legal questions and moral decisions under uncertainty, for example. It was connected with the theme of rational decision-making under uncertainty, which was the starting-point for discussions of probability in late medieval theology. The theory was viewed as a method of reaching good decisions, working as a "reasonable calculus."[355]

Hacking identifies these two different kinds of probability according to the nature of the evidence used. Taking a distinction drawn in Arnauld's and Nicole's *L'Art de Penser*, or Port-Royal logic, he suggested that aleatory probability was based on internal evidence (*circonstances intérieures*) concerning the things in question, whereas external evidence (*circonstances extérieures*), typical of epistemological probability, was based on the testimony or opinion of authorities.[356] The former was developed in the 16th century by representatives of the "low" sciences such as Paracelsus. By low science he referred to empirical sciences such as alchemy, astrology, geography and physiology.[357]

Hacking's claim concerning the birth of classical probability has provoked a lot of criticism. Initially it was said that the distinction between "old" epistemic probability and "new" statistical probability was a simplification since there were many other kinds. According to Lorraine Daston, the classical interpretation is a combination of no less than four distinct intellectual traditions: [358]

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[354] Ibid., pp. 11-12. See also Franklin, *The Science of Conjecture*, ch. 10 and Daston, *Probability and Evidence*, p. 1109.

[355] Daston, *Classical Probability in the Enlightenment*, p. xi.

[356] Hacking, *The Emergence of Probability*, p. 39.

[357] Ibid., ch. 4.

[358] Daston, *Probability and Evidence*, p. 1110. See also Daston, *Classical Probability in the Enlightenment*, pp. 11-12. On the concept of verisimilitude in ancient thought, see Niiniluoto, *Scepticism, Fallibilism, and Verisimilitude* and Franklin, *The Science of Conjecture*, p. 102f.

1) The Ancient tradition of rhetoric (Aristotle, Cicero, and various Arabic and Latin commentators)
2) Thomas Aquinas' discussion of the probability of authority, which influenced theological discussion
3) Conceptions of fortune in medieval times
4) The hierarchy of proofs developed by Roman and Canon jurists

Evidence collected by Daniel Garber and Sandy Zabell from medieval handbooks of law and rhetoric shows that the idea of internal evidence was established in rhetoric and jurisprudence after the 12th century.[359] Later scholars, such as Franklin and Knebel,[360] expanded the criticism of Hacking's views by looking at ancient and medieval texts concerning legal and economic cases involving risk estimation in business ventures. Such calculations were already in use in the granting of ancient Athenian high-interest maritime loans for ship voyages, repayable only if the ship arrived safely.[361] In the 13th century Peter Olivi based his discussion of lucrative business ventures on the concept of probable presumption (a supposition that stands unless contrary proof appears) in relation to comparison between the extent of various risks. He, and later Scotus and Buridan, tried to estimate at what risk it was reasonable to start a business, in other words, they tried to estimate the probable profit from such ventures.[362]

By the end of the 14th century insurance contracts had become common in Italian maritime business, which involved lots of

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[359] See Garber and Zabell, *On the Emergence of Probability*; See also Daston, *Classical Probability in the Enlightenment*, pp. 12-13.

[360] See Franklin, *The Science of Conjecture* and Knebel, *Wille, Würfel und Wahrscheinlichkeit.*

[361] Franklin, *The Science of Conjecture*, p. 259. Franklin also suggests that Roman law incorporated statistical calculations of life expectancy. Ibid., p. 260.

[362] The works in question are Olivi, *De emptionibus et venditionibus, de usuris, de restitutionibus*, Duns Scotus, *IV Sententiarum*, dist. 15 and John Buridan, *Quaestiones et dubia in Aristotelis politica* I, q. 13, discussed in Franklin, *The Science of Conjecture*, pp. 267-69.

potential dangers.[363] In the 16th and 17th centuries jurists (including Hugo Grotius, François Grimaudet, Estienne De La Roche, Pierre Forcadel, Simon Stevin and Thomas Masterson) hoped to override church proscriptions against usury by equating interest reaped on investments in a merchant-shipping expedition, for example, with legitimate earnings from work done or services rendered. Investors, acting as insurers, deserved a share of the profit for having shared the risks, and the profit of each partner in the expedition should be proportional to his investment.[364] Thus a method for calculating and estimating these sums was needed. Aleatory contracts, based on internal evidence, were an established category in civil law by the 16th century.[365]

Another kind of aleatory contract was related to the lack of public funding. In medieval times the practice of selling annuities (one paid a sum of money and received a stated annual income) became common, and lotteries were arranged from the 15th century due to the general lack of money.[366] A special form of annuity was life annuity, which was a form of insurance and was very popular. For example, German towns in the 13th century sold life annuities regularly, and the Church was also involved in this kind of money-raising: this caused a lot of criticism, since the practice involved an element of betting on the seller's estimate of the death of the purchaser.[367] However, there seems to be no evidence that rates were computed on the basis of mortality statistics, although their

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[363] Insurance was also convenient with relation to canon law, since it was not considered to be a loan that was prohibited. On the practice of insurance, see Franklin, *The Science of Conjecture*, pp. 276-77 and Daston, *Classical Probability in the Enlightenment*, pp. 117-20. See also Knebel, *Wille, Würfel und Wahrscheinlichlkeit*, pp. 107-09 on Caramuel's views on estimating commercial risks.

[364] See Daston, *Classical Probability in the Enlightenment*, p. 20.

[365] Ibid., p. 19.

[366] On lotteries, see Ibid., pp. 141-63.

[367] For examples of selling annuities and criticism of the church, see Franklin, *The Science of Conjecture*, pp. 269-72 and Daston, *Classical Probability in the Enlightenment*, pp. 122-23.

calculation was discussed in many treatises authors by such as Baldus and Du Moulin.[368]

In 1671 Jan De Witt applied Huygens' idea of expectation to life annuities in his *Waerdye vab Lyf-Renten* (Treatise on Life Annuities), which was one of the first works to apply the idea of mathematical probability to something other than games of chance.[369] His work (although based on a hypothetical mortality table), along with Hudde's tables of mortality (based on life annuities sold in Amsterdam in 1586-90), John Graunt's *Natural and Political Observations Mentioned In A Following Index and Made Upon the Bills of Mortality* (1662), and Edmund Halley's *An Estimate on the Degrees of Mortality of Mankind, Drawn From Curious Tables of the Birth and Funerals at the City of Breslaw…* (published in *Philosophical Transactions*, 1693) all paved the way for a new kind of demographics in which mathematical probability was applied to empirically collected statistics.[370]

Just as jurists argued that profits should be shared in proportion to the risks and sums involved, the situation in games of chance was similar. A fair game should be based on the equality of expectations, so if a game was interrupted the players should gain the amount of money they were entitled to. Writings on games of chance, such as Luca Pacioli's *Summa de Arithmetica* and Gerolamo Cardano's *Practica Arithmetica* and *De Ludo Aleae* at the end of the 15th and the mid-16th century preceded the famous correspondence between Fermat and Pascal in 1654 (published in 1679) and Huyguens' *De ratiociniis in ludo aleae* (1657), which for the first time laid down explicit rules for calculating probabilities. These works were adapted by De Witt and Leibniz, among others,

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[368] See Daston, *Classical Probability in the Enlightenment*, p. 27 and Franklin, *The Ancient Legal Sources of Seventeenth-Century Probability*, p. 129. On the practical assessment of life annuity in medieval times, see Daston, *Classical Probability in the Enlightenment*, pp. 122-25.

[369] See Daston, *Classical Probability in the Enlightenment*, pp. 27-28.

[370] For a short summary of De Witt's work, see Franklin, *The Ancient Legal Sources of Seventeenth-Century Probability*, p. 132. On the history of demographics, see Sheynin, *Early History of the Theory of Probability*, pp. 216-230 and Daston, *Classical Probability in the Enlightenment*, p. 128f.

and led to the first major treatise on the subject, Jakob Bernouilli's *Ars Conjectandi* (1713).[371]

All these developments are incorporated into Hacking's statistical probability which employs internal evidence based on conjecture. However, there are also traces of it in "epistemological" probability, or probability based on external evidence.

The epistemological practice of estimating probabilities, commonly known as casuistry in medieval and early modern times, was a question of the opinion of (Church) authorities rather than measurement. According to Thomas Aquinas, the premise of dialectical reasoning was necessarily either the most plausible or credible opinions (*maxime opinabilia*), or probable opinions (*probabilia*). These were opinions that were accepted by most people, or by the majority of the wise, or by the most distinguished of them.[372] Thus probability with reference to an opinion meant its approvability by qualified people.

According to Aquinas, we must follow the opinions of those who have arrived with more certainty at the truth. Ilkka Kantola has argued that Aquinas' statement implied statistical probability based on internal evidence. We should not follow the opinions of ordinary people, or even of common philosophers, but should heed the most able theologians since their thinking might have been influenced by truth itself.[373]

In late medieval times two schools of moral theology emerged that disagreed on how one should judge the probability of the proposed act in relation to the authorities.

According to probabilism, which was established by the Dominican father Bartholome de Medina in his work *Expositiones in primam secundae Divi Thomae* in 1577, a probable opinion is enough – it is a morally safe choice even though there may be another, more approved opinion. Choosing a probable opinion is "to be on the safe side." It is not necessary to continue the

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[371] For a summary of these, see Franklin, *The Science of Conjecture*, 306-17 and Daston, *Classical Probability in the Enlightenment*, pp. 24-26 & 38-40.
[372] Kantola, *Probability and Moral Uncertainty in Late Medieval and Early Modern Times*, p. 28.
[373] Ibid., p. 29.

deliberation or to strive to find a better opinion after having such an opinion – choosing it suffices to render our moral conduct acceptable.[374]

Probabilism was attacked severely by proponents of probabiliorism.[375] Thyrsus Gonzales, the general of the Jesuits, argued that the term "probability" should be interpreted more clearly. He took it to mean the approvability of a proposition by prudent assent. Thus the choice is between options the agent finds subjectively probable, in other words, more true than their negations. This is not enough, however, since the proposition should also be considered approvable by authorities - it should also have some objective probability.

Gonzales referred to Aristotle's *Topics*, arguing that "the bigger number of fathers and the more notable the fathers who support an opinion, the more probable it is considered to be" and "the sentence supported by fewer notable authors…is commonly thought to be less probable."[376] Thus mere probability will not do in probabiliorism: one should choose the option that is most widely accepted by qualified authorities.

This also means that the more experts who find the recommended proposition true and acceptable, the more objectively probable and acceptable it is, since it is improbable that they all err on the question.[377] If we have seven qualified experts and they all argue that option x is better than y, and two experts who all argue that y is better than x, it is more probable that the

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[374] Kantola, *Probability and Moral Uncertainty in Late Medieval and Early Modern Times*, p. 130. Suarez also accepts this view, since according to him, it would be unfair to require everyone to compare probabilities – it is sufficient that one knows which opinions are probable and which are not. Ibid., p. 137. On probabilism after Medina, see Schüssler, *Moral im Zweifel*, 158f.

[375] The most famous work representing probabiliorism is Thyrsus Gonzales' *Fundamentum theologiae moralis* (1694).

[376] Gonzales, *Fundamentum theologiae moralis*, Diss. I 27. The quotations are from Kantola, *Probability and Moral Uncertainty in Late Medieval and Early Modern Times*, p. 150.

[377] Kantola, *Probability and Moral Uncertainty in Late Medieval and Early Modern Times*, p. 151.

seven experts are right: two can make a mistake more easily than seven. Thus probabiliorism changes the idea of probability from the judgement of external evidence (*opinio*) to the judgement of internal evidence (the "statistical" comparison of opinions).

To conclude, some of casuist views on probability were not based only on external evidence, as Hacking holds. Probabiliorism includes the idea that the objective risk of error with regard to an opinion depends on how widely that opinion is accepted by qualified authorities and experts.[378] Understood in this manner, the concept of probability includes a statistical component resting on internal evidence.

6. 2. Leibniz's Views on Probability

Leibniz was well aware of these discussions. He was striving for a demonstrable probability calculus that could ultimately be used as a basis for resolving controversies.[379] He thought that a generalised theory of games could be the foundation for this calculus.

He wrote in his short memoir *Ut jus Romanum in artem*…that there was a need for mathematics of jurisprudence, in which it was a question of establishing examples of measures, weights and the notation of duration.[380] This would be a new kind of topics, different from Aristotle's.[381]

> "I have said more than once that we need a new kind of logic, concerned with degrees of probability, since Aristotle in his *Topics* could not have been further from it: he was content to set out certain familiar rules, arranged according to the commonplaces-rules, which may be useful in some contexts where a discourse has to be developed and given some likehood – without taking the trouble to provide us with the balances that are needed to weigh likehoods and to arrive at

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[378] Ibid., p. 31.

[379] According to Hacking, Leibniz was the first to try to axiomatise probability as a pure inferential science. Hacking, *The Emergence of Probability*, p. 58.

[380] Leibniz, *Le Droit de la raison*, pp. 211-212.

[381] On Leibniz's reaction to Aristotle's *Topics*, see Olaso, *Leibniz et l'art de disputer*, p. 209f.

> sound judgements regarding them. Anyone wanting to deal with this question would do well to pursue the investigation of games of chance..."[382]

This calculus requires the analysis of proofs. Leibniz insisted that proofs had to be analysed thoroughly and scientifically, and that the same requirements had to be applied to cases of probability as to natural science. When forming a judgement, one should strive for the greatest probability, and not only for some inductive or moral certainty that would work in most cases (*ut in pluribus*, the famous medieval phrase).[383] Thus Leibniz's idea of a probability calculus was a kind of *a priori* method of deciding in uncertain practical situations. It would be a general theory of rational decision-making under uncertainty:

> "It is true that this part of useful logic has not yet been found, but it will be of marvellous use in practical matters when it is a question of presumptions, indices and conjectures, in order to know the degrees of probability when there are a number of apparent reasons in favour of one or the other in some important deliberation. Thus when there are not enough given conditions to demonstrate certainty, the subject being merely probable, one can always give at least demonstrations concerning the probability itself."[384]

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[382] "J'ay dit plus d'une fois qu'il faudroit une nouvelle espece de Logique qui traiteroit des degrés de probabilité, puis qu'Aristotle dans ses *Topiques* n'a rien moins fait que cela, et s'est contenté de mettre en quelque ordre certaines regles populaires distribuées selon les lieux communs, qui peuvent servir dans quelque occasion où il s'agit d'amplifier le discours et de luy donner quelque apparence, sans ce mettre en peine de nous donner une balance necessaire pour peser les apparances et pour former là dessus un jugement solide. Il seroit bon que celuy qui voudrait traiter cette matiere, poursuivit l'examen des jeux de hazard…" (*Nouveaux Essais* IV, xvi, §9) A VI, 6, p. 466; RB, p. 466.

[383] On medieval conceptions of this kind of psychological certainty, see Kantola, *Probability and Moral Uncertainty in Late Medieval and Early Modern Times*, pp. 48-49.

[384] "Il est vray que cette partie de la Logique utile ne se trouve encor nulle part, mais elle seroit d'un merveilleux usage dans la practique, lorsqu'il s'agit des presomtions, des indices et des conjectures, pour connoistre les

Probability calculus proved to be much more difficult to form than Leibniz had though, however.[385] Nevertheless, he never seemed to lose hope for the success of this project, and planned to work on it whenever other pressing matters allowed him the time.[386]

In the absence of a probability calculus one has to settle for merely estimating probabilities without calculating them precisely. If we can successfully argue that one solution is more probable than another, we have a useful method for resolving practical difficulties and controversies. This was vital on the legal questions that were a common starting point for probabilistic discussion in Leibniz's time. Jurisprudence served as a model for deliberating about contingencies since legal theories of evidence supplied probabilists with a model for ordered and even roughly quantified degrees of subjective probability.[387] Other practical sciences were also able to benefit from assessing probabilities:

> "I will not exclude medicine itself or other conjectural sciences in trying to develop a calculus of hazard and the estimation of probability. This domain requires a characteristic of a new kind and laborious preparations."[388]

In what follows I will look at these different ways of calculating or estimating probability, and analyse some case studies that Leibniz discussed in different memoirs concerning practical matters. I will

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degrés de la probabilité, quand il y a quantité de raisons apparentes de part et d'autre dans quelque deliberation d'importance. Ainsi lorsqu'on n'a pas assez de conditions données pour demonstrer la certitude, la matiere n'estant que probable, on peut tousjours donner au moins de demonstrations touchant la probabilité même." (*Préceptes pour avancer les sciences*) G VII, p. 167.

[385] Leibniz, *L'estime des apparences*, p. 7.

[386] See Leibniz's letter to Burnett 1. 11. 1697. G III, p. 194.

[387] Daston, *Classical Probability in the Enlightenment*, p. 14.

[388] "Je n'exclus ni la médecine elle-même ni les autres sciences conjecturales faisant intervenir une sorte de calcul des hasards et d'estimation de la probabilité, mais en ce domaine il est besoin d'une caractéristique d'un nouveau genre et de laborieux préliminaires." (*Geometriae utilitas medicina mentis*) A VI, 3, p. 451, cited in Parmentier, *Concepts juridiques et probabilistes chez Leibniz*, p. 449, n. 35.

first consider his attempts at calculating demonstrative probability, and then take some cases in which the probability can only be estimated.

6. 2. 1. Calculating Probability

Leibniz was interested in statistical and economic models and wrote countless memoirs on these subjects. His most influential memoir on statistical probability was *De incerti aestimatione* from 1678, in which he developed a system to estimate probabilities of parts in relation to a definite goal.[389] The problem is connected to games and the question of justly dividing the stake when two players have to break off a set of prearranged games.[390]

As an axiom he stated: "If players do similar things in such a way that no distinction can be drawn between them, with the sole exception of the outcome, there is the same proportion of hope and fear."[391] Hope is the expectation of possessing and fear is the expectation of losing, an axiom that allows for the introduction of mathematical symmetry.[392] Probability is defined as a degree of possibility in a logical sense, thus Leibniz's views were in line with

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[389] According to Wolfgang David Cirilo de Melo and James Cussens, the memoir includes the first appearance of the definition of probability in terms of equally possible cases, the central argument being that probability is the degree of possibility. De Melo & Cussens, *Leibniz on Estimating the Uncertain*, pp. 31-32.

[390] Leibniz also wrote of many individual games, such as *Bassette*, *Hombre* and *Solitaire*. For the texts of these games, see Leibniz, *L'Estime Des Apparences*.

[391] "Si ludentes similia agunt ita ut nullum discrimen inter ipsos assignari possit, nisi quod in solo eventu consistat eadem spei metusque ratio est." A VI, 4, p. 92; Leibniz, *On Estimating The Uncertain*, p. 43.

[392] "Probabilitas est gradus possibilitatis. Spes est probabilitas habendi. Metus est probabilitas amittendi. Aestimatio rei tanta est, quantum est jus cujusque in rem." A VI, 4, p. 94. For a more extensive presentation of Leibniz's views of games in *De incerti aestimatione*, see Biermann and Faak, *G. W. Leibniz' "De incerti aestimatione"*, pp. 46-47. For an example of calculating the likehood of winning or losing, see also *Nouveaux essais* IV, xvi, §9.

those of Huygens, Pascal, Fermat and Arnauld.[393] However, Leibniz's solution did not represent any significant advance over Huyguens' classic work, which he had probably read. Despite this, it had one significant merit: while Huygens assumed that games of chance were fair and was merely interested in the mathematical consequences of different positions in the game, Leibniz was especially concerned about its fairness. Thus his point of departure was legal while Huygens' was mathematical.[394]

One should estimate each player's fair share of the whole stake (hopes of winning), and these shares are regarded as the rights of the players. This rule is a combination of addition and multiplication: one must multiply each eventual gain by its probability and then form a sum of all the consequences in order to arrive at a player's total profit:

> "If among all possible outcomes some yield the value A, others the value B, and the rest the value C, then the total expectation (*spes*) will be the sum of the several values multiplied by the number of possible outcomes that yield them, divided by the number of all possible outcomes. Thus if the number of outcomes that can yield the value A is a, the number of outcomes that can yield the result B is b, and the number of outcomes that can yield the result C is c, and the number of all possible outcomes is n, then the expectation will be

[393] See *On Estimating The Uncertain*, p. 45. On expectations, see Daston, *Classical Probability in the Enlightenment*, pp. 18-25. Franklin argues that this is the first occurrence of the modern way of thinking of probability as a ratio of "favourable" outcomes to all outcomes. See Franklin, *The Ancient Legal Sources of Seventeeth-Century Probability*, p. 141.

[394] See De Melo & Cussens, *Leibniz on Estimating the Uncertain*, p. 32.

$$s = \frac{aA + bB + cC}{n}."$$[395]

In another place Leibniz formulated the principle in a slightly different way:

> "To put it in a general way, if the various successful outcomes can be kept separate in an activity, the estimated value of my hope will be the sum of possible successes collected from all outcomes, divided by the number of outcomes. And in the same way, if the various negative outcomes can be kept separate in a transaction, the estimated value of my fear will be the sum of possible losses collected from the various cases, divided by the number of outcomes or cases."[396]

Thus a/n is the probability of realising the value A, b/n is the value of realising the value B, and c/n is the value of realising the value C. An example from the insurance business would be a case in which the probability of a ship's sinking in a storm during a certain voyage was one in a hundred, with the loss standing at 10,000 ducats on the outbound voyage and 40,000 ducats on the return voyage. The overall effective magnitude of this misfortune

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395 "Si ex omnibus eventibus aliquot dent rem A, aliquot alii rem B, et reliqui rem C, erit spes tota aggregatum ex rebus singulis in numerum eventuum possibilium omnium. Ut si numerus eventuum qui dare possunt rem A sit a, numerus eventuum qui dare possunt rem B sir b, et numerus eventuum qui dare possunt rem C sit c, et numerus omnium eventuum sit n, erit spes s aequ

$$\frac{aA + bB + cC}{n}. "$$

Biermann and Faak, *G. W. Leibniz' "De incerti aestimatione"*, pp. 46-47, translated in Leibniz, *On Estimating The Uncertain*, pp. 47-48.

396 "Generaliter si diversos eventus utiles disjunctim habere possit negotium, spei aestimatio erit summa utilitatum possibilium ex omnibus eventibus collectarum, divisa per numerum eventuum. Et [eodem] modo si diversos eventus damnosos disjunctim habere possit negotium metus aestimatio erit summa damnorum possibilium ex diversis casibus [collectorum], divisa per numerum eventuum seu casuum." A VI, 4, p. 93; Leibniz, *On Estimating The Uncertain*, p. 45.

of losing the ship in a storm would be appraised at (.01 x 1/2) x 10,000 (1/100x1/2x10,000=50) + (.01 x 1/2) x 40,000 (1/100x1/2x40,000=200), which would amount to 250 ducats. The sum would represent a reasonable measure of the magnitude of the loss in question, and would provide a quantity guide in estimating the cost of insurance.[397]

Leibniz also wrote many memoirs on economics issues in which he often applied his new ideas of probability. One of his major themes in this context was life expectation, which as already mentioned had its roots in medieval practices of selling life annuities. Leibniz considered life annuities to be a form of loan that was well suited to commercial and industrial business.[398]

Life annuity works as follows. A person agrees to invest a certain amount in a business (in medieval and early modern times these businesses were typically related to a city or a state), in exchange for which the company or state agrees to pay a fixed amount every year until the investor dies. When this happens, the payments cease and the company keeps the balance of the investment if anything remains. Thus the factors to be taken into account by the company when calculating life annuity are the amount of money to be earned from the business and the expected length of life of the investor.[399]

Leibniz considered different methods for calculating annuities in a memoir called *Loss und Leibrenten* from 1680 (A IV, 3, pp. 432-35). One of these involved calculating average life expectancy by considering the annuities received in each age group.

He argues that of a group of 60 people receiving annuties, ten will live to the age of 10 (the mean being five years), eight to the age of 20, eighteen to 30, eighteen to 50, three to 60, two to 70 and one to the age of 80. The sum of total annuities could be calculated by multiplying the mean of each age group by the number of

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[397] The example is from Rescher, *Leibniz, Keynes, and the Rabbis on a Problem of Distributive Justice*, pp. 342-43.

[398] For relevant texts, see Leibniz, *L'estime des apparences*. See also Rohrbasser & Veron, *Leibniz et la mortalité*.

[399] On life annuities from medieval times onwards, see Franklin, *The Science of Conjecture*, p. 269f.

deaths in that group. This would show the total annuities received in each age group of 10 years.[400] These calculations are summarised in the following table[401]

Age	Mean	Mortality	Received annuities
1-10	5	10/60	10 x 5= 50
10-20	15	8/60	8 x 15 = 120
20-30	25	18/60	18 x 25 = 450
30-50	40	18/60	18 x 40 = 720
50-60	55	3/60	3 x 55 = 165
60-70	65	2/60	2 x 65 = 130
70-80	75	1/60	1 x 75 = 75

It is clear from the table that the largest amount of annuity is received in the age group 30-50 years (the mean being 40 years). Another task Leibniz set for himself was as follows:

> "Now we could ask if all of these die suddenly and for this reason receive an even amount of annuity, at which age will they die."[402]

The average life expectancy is calculated as the sum of annuities, 1710, divided by the number of people (60), which results in 28.5 years. This result is strange, since as noted, the largest amount of annuity was received at around the age of 40. According to Marc Parmentier, the mistake in Leibniz's calculation was due to the supposition that the annuity was set at birth, which was contrary to practice. This goes to show that it was more of a thought experiment than a serious proposition – in fact, Parmentier

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400 A IV, 3, p. 434.

401 I have combined the formulations of Marc Parmentier and J. – M. Rohrbasser & J. Verón in this table. See Leibniz, *L'estime des apparences*, p. 325, n. 39 and Rohrbasser & Veron, *Leibniz et la mortalité*, p. 36.

402 "Fragts sichs nun[,] wenn sie alle zugleich gestorben weren, und doch ebenso viel leibrenten bekommen hätten[,] in welchem jahre sie werden gestorben seyn." A IV, 3, p. 434.

thought it was meant merely to illustrate the different uses of such a calculus.[403]

Another of Leibniz's memoirs, *Lebenserwartung* I (A VI, 3, p. 449-52, in Latin, without a title), is more promising. Here he discussed the average life expectancy in a group of eighty people, and presumes, following Hudde, that the maximal age men could reach in most cases was 80 years.[404] He calculated this figure by giving the value zero to a child aged one year, one to a two-year old and so on, the maximal value thus being 79, which was given to a eighty-year-old. The calculation goes as follows:[405]

$$\frac{0 + 1 + 2 + 3 \ldots +79}{80} = \frac{3160}{80} = 39.5 \text{ years}$$

The life expectancy of a new-born child in its first year of life was thus 39.5 years, reduced every year that passed. Similarly, if the child reached the age of ten (when the most dangerous phase of childhood illnesses had passed), the expected remaining lifetime was as high as

$$\frac{0+1+2+3 \ldots +70}{71} = \frac{2485}{71} = 35 \text{ years.}$$

6. 2. 2. Estimating Probability

When there is no possibility of calculating probabilities one has to settle for epistemic probability. In these cases it is a question of acceptability or trustworthiness of an opinion or a proof. As postulated, to persuade is to make one believe and to believe is to

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[403] Leibniz, *L'estime des apparences*, p. 319 & 325. The result, however, is in line with the contemporary analyses of Sauvy, who estimated for life expectancy to be 25 to 30 years. See Leibniz, *L'estime des apparences*, p. 301.

[404] For a discussion for his reasons to this presumption, see Rohrbasser & Veron, *Leibniz et la mortalité*, pp. 32-33.

[405] The formulation is from Rohrbasser & Veron, *Leibniz et la mortalité*, p. 41. Leibniz's formulation was a little more complicated. See A IV, 3, p. 450.

be aware of the reason.[406] He called degrees of probability "estimations of appearances", meaning that we must base our rational estimations on our perceptions of the available evidence, if possible.

He often related this kind of "epistemological" probability to jurisprudence, as he did in *De conditionibus* (1665) and *Specimina Juris* (1667-69), in which he argued for the need to estimate degrees of probability and gave some ideas for doing so. He was perhaps the foremost combiner of jurisprudence and probability - he called the combination "natural jurisprudence."[407] Although he strived for demonstrative probability in jurisprudence, he was unable to give an example of it when Bernoulli asked him in 1703.[408]

The epistemological "mathematics" of jurisprudence is related to weighing up or estimating proofs and choosing between them. Thus one has to estimate which option of two (or more) is more probable regarding the given goal, in this case in deciding whether the accused is guilty or not.

In some cases, however, there is no relevant evidence available, or it cannot be used in the estimations. Leibniz admitted in the fourth book of *Nouveaux essais,* ch. xx, §17 that in many cases one cannot help but follow the authorities. Although one is not obliged to go along with received opinions without proof, one is not allowed to reject them without proof either.[409] A good example of

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[406] In another fragment from the same time, *De controversiis*, A VI, 4, p. 2162, Leibniz wrote: "Qui rationibus certant vicisse videbuntur, ubi scopum assecuti erunt, scopus autem est persuadere."

[407] "…une Jurisprudence naturelle, par laquelle on apprenne demonstrativement la maniere d'estimer les degrés des preuves." (Letter to Burnett 1. 11. 1697) G III, p. 194; Hacking, *The Emergence of Probability*, p. 86. On Leibniz's views of jurisprudence, see Riley, *Leibniz's Universal Jurisprudence.*

[408] Franklin, *The Science of Conjecture*, p. 365.

[409] "...aux opinions reçuës elles ont pour elles quelque chose d'approchant à ce qui donne ce qu'on appelle Presomption chez les Jurisconsultes: et quoyqu'on ne soit point obligé de les suivre tousjours sans preuves, on n'est pas autorisé non plus à les detruire dans l'esprit d'autruy sans avoir des preuves contraires." A VI, 6, pp. 517-518; RB, pp. 517-518.

this critical acceptance of the opinions of authorities is the following:

> "…when some inheritance or piece of land is to be sold, they appoint three teams of assessors – these teams are called *Schurzen* in Low Saxon – and each team assesses the commodity in question. Now suppose that the first estimates its value at 1,000 crowns, the second at 1,400 and the third at 1,500; they take the total of these three, which is 3,900, and because there were three teams they take a third of this, 1,300 as the mean value sought. Or what comes to the same thing, they take the sum of one third of each estimate."[410]

In this model, which was already in use in ancient times, opinions are compared and the mean is calculated. In general, however, Leibniz was of the opinion that one should not trust the authorities, but rather accept the evidence of the things themselves:

> "I do speak here of not the probability of the Casuists, which is founded on the number and reputation of the doctors, but of the probability that is drawn from the nature of things in proportion to what is known of them, and which may be called likehood."[411]

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[410] "…quand quelque heritage ou terre doit estre venduë, ils forment trois bandes d'estimateurs; ces bandes sont appellées *Schurzen* en bas Saxon, et chaque bande fait une estime du bien en question. Supposé donc que l'une l'estime estre de la valeur de 1000 Ecus, l'autre de 1400, la troisieme de 1500, on prend la somme de ces trois estimes qui est 3900, et parce qu'il y a eu trois bandes, on en prend le tiers, qui est 1300 pour la valeur noyenne demandée. Ou bien, ce qui est la même chose, on prend la somme des troisiemes parties de chaque estimation…" (*Nouveaux essais*, IV, xxvi, §5) A VI, 6, p. 465; RB, p. 465.

[411] "Je ne parle pas icy de cette probabilité des Casuistes, qui est fondée sur le nombre et sur la reputation des Docteurs, mais de celle qui se tire de la nature des choses à proportion de ce qu'on en connoist, et qu'on peut appeler la vraisemblance." (*Préceptes pour avancer les sciences)* G VII, p. 167. Some other instances: "...la plus parts des Casuistes, qui ont écrit sur la Probabilité n'en ont pas même compris la nature; la fondant sur l'autorité avec Aristote, au lieu de la fonder sur la vraisemblance comme ils devroient: l'autorité n'estant qu'une partie des raisons qui font la vraisemblance." (*Nouveaux essais*, II, xxi, §66) A VI, 6, p. 206; RB, p. 206, "In

This does not mean, however, that Leibniz completely rejected the opinions of the authorities. He mentioned Thyrsus Gonzales, the leading proponent of probabiliorism and the general of the Jesuits, in a positive manner, stressing that although the opinion of weighty authorities was one of the things that could contribute to the likehood of an opinion, it did not produce the likehood in itself.[412] He criticised Medina for putting safety ahead of probability since safety concerned the improbability of an impending evil.

> "Moralists who are lax about this have gone wrong largely because they have had an inadequate and over-narrow notion of probability, which they have confused with Aristotle's *endoxon* or acceptability."[413]

The moral theologians thought that the general acceptance of the authority of the church was the starting point of judgement and that one should follow it if there were no good reason not to. However, this often meant that new opinions were feared and that the evidence was more often external than internal, in other words few were bold enough to argue against the accepted maxims.

Leibniz held that, in general, the weight of evidence from the nature of things was always more important than accepted opinion, just as proof was more important than presumption. As an example he mentioned Copernicus: "And at the time when Copernicus was almost alone in his opinion, it was still

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bonitate autem et prudentis directoris solum confidere a justitiae pariter et politicae rationibus alienum est." (*Vitia disputationis confusaneae)*, A VI, 2, p. 389.

412 "Et lors que nos Moralistes (j'entends les plus sages, tels que le General moderne des Jesuites) joignent le plus sur avec le plus probable...l'opinion des personnes, dont l'autorité est de poid, est une des choses, qui peuvent contribuer à rendre une opinion vraisemblable, mais ce n'est pas ce qui acheve toute la verisimilitude." (*Nouveaux essais*, IV, ii, §14). A VI, 6, pp. 372-73; RB, pp. 372-73.

413 "Le defaut des Moralistes relachés sur cet article, a été en bonne partie, d'avoir eu une notion trop limitée et trop insuffisante du probable, qu'ils ont confondû avec l'Endoxe, ou opinable d'Aristote. (*Nouveaux essais*, IV, ii, §14). A VI, 6, p. 372; RB, p. 372.

incomparably more likely than that of all the rest of the human race."[414]

6. 2. 2. 1. Proofs and Presumptions

Given his profession, Leibniz was well aware of the standard legal procedures and strived to apply and develop them in his quest to resolve the controversies. The legal system in his time was a synthesis of Roman and Canon law. During the 16th and 17th centuries continental jurists refined and rendered uniform traditional practices, and a hierarchy of different-level proofs (consisting of indices, suspicions, conjectures, presumptions, confessions, oaths and written documents, for example), provided a model for estimating the degrees of certainty and complemented the rhetoric of the jurists.[415]

The main distinction was between two kinds of proof, the demonstrative (*probatio vera*) and the presumptive (*probatio ficto*), which had been established in the 12th century. It evolved into a system of presumptive proofs of varying degrees of strength, the goal being the complete proof (*probatio plena*) that was required for conviction in capital cases.[416] Under the system the value one represented complete proof and the value zero no proof at all, the fractions signifying degrees of presumptive proof. The

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414 "Et lorsque Copernic êtoit presque seul de son opinion, elle êtoit tousjours incomparablement plus vraisemblable que celle de tout le reste du genre humain." (*Nouveaux essais* IV, ii, §14). A VI, 6, p. 373; RB, p. 373. In his letter to Landgrave Ernst von Hessen-Rheinfels Leibniz cited the condemnation of Copernicus' doctrines as a major reason for not converting to Catholicism. See A I, 4, p. 320.

415 In 1532 *Constitutio Criminalis Carolina* established the Roman-canon doctrine of indices (*Indizienlehre*) in Germany. Daston, *Classical Probability in the Enlightenment*, pp. 41-42.

416 A rich academic tradition centred on these legal conjectures evolved. Among these works Franklin mentions Menochio's *Commentary on Presumptions, Conjectures, Signs and Inclinations*, Alciati's *Treatise on Presumptions* and Mascardi's *On Proofs* as availabe to Leibniz. Franklin, *The Ancient Legal Sources of Seventeeth-Century Probability*, pp. 137-38. On the definition and nature of proofs, see Lévy, *La hiérarchie des preuves*, p. 22f.

corroborative testimony of two unimpeachable eyewitnesses constituted complete proof, and the testimony of one eyewitness constituted a half-proof.[417] If there were no such witnesses, complete proof could be constructed by the judge, using the combinatorial method, from the sum of half-proofs and even of quarter-proofs.[418]

Leibniz was well aware of these practices, as evidenced in Chapter xvi of Book IV of the *Nouveaux Essais*, which was devoted to the subject of degrees of assent:

> "When jurists discuss proofs, presumptions, conjectures, and evidence, they have a great many good things to say on the subject and go into considerable detail. They begin with common knowledge, where there is no need for proof. They next deal with complete proofs, or what passes for them: judgements are delivered on the strength of these, at least in civil actions…then there are presumptions that are accepted provisionally as complete proofs - in other words, for as long as the contrary is not proved…Apart from these, there are many degrees of conjecture and of evidence." [419]

Of special importance to Leibniz was the method of presumption. Presumption is an inference drawn from known facts about doubtful ones and accepted provisionally as complete proof as

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[417] Azo, *Lectura super codicem* 4 tit. I, 254. See also Franklin, *The Science of Conjecture*, p. 18.

[418] Daston, *Classical Probability in the Enlightenment*, p. 42; Parmentier, *Concepts juridiques et probabilistes chez Leibniz*, p. 443.

[419] "Les Jurisconsultes en traittant des preuves, presumptions, conjectures et indices ont dit quantité de bonnes choses sur ce sujet et sont allés à quelque detail considerable. Ils commencent par la Notorieté, où l'on n'a point besoin de preuve. Par aprés ils viennent à des preuves entieres ou qui passent pour telles, sur les quelles on prononce, au moins en matiere civile…Puis il y a presumptions, qui passent pour preuves entieres provisionnellement, c'est à dire, tandis que le contraire n'est point prouvé…Hors de cela il y a quantité de degrés des conjectures et des indices." A VI, 6, p. 464; RB, p. 464. Couturat cited also Leibniz's letter to Bernouilli 6. 6. 1710, where Leibniz discussed the issue in similar manner. Couturat, *La logique de Leibniz*, p. 240, n. 3.

long as the contrary is not proved.[420] Thus if the judge has sufficient reason to believe one party he maintains that opinion unless there are good reasons to believe the other party. This situation is common when there are conflicting opinions. As Leibniz was often attempting to resolve difficult moral and political controversies, presumption became an essential part of his methodology for estimating probability, although proof was always superior.[421] However, presumption was more than just a half-proof – it was a provisional full proof. [422]

6. 2. 2. 2. Some Examples

Leibniz's baccalaureate disputation *De Conditionibus* (A VI, 1, p. 99-) from 1665 was based on the traditional manner of judging proofs discussed above, but also offered some novel ideas. It started with 160 definitions and 134 theorems, which were meant to establish the requisites for conditional or hypothetical jurisprudence (*jus conditionale*). The second part, which contained explications of the first part, is more interesting in the context of this study. Point 114 gives the following table:[423]

Jus nullum	Jus C[onditiona]le	Jus purum
Co impossibilis	incerta	necessaria
cypra	fractio	integrum

Jus nullum represents no claim (0) and *jus purum* represents absolute right (1). Conditional right is a fraction (Leibniz used ½)

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[420] As with proofs, there are several degrees of presumption. For a discussion on degrees of presumption, see Franklin, *The Science of Conjecture*, pp. 20-21 and Daston, *Classical Probability in the Enlightenment*, p. 42.

[421] It seems that Leibniz was most influenced in this by the Renaissance legal theorists Menochio and Mascardi. Franklin, *The Science of Conjecture*, p. 364.

[422] On the nature of half-proofs, see Lévy, *La hiérarchie des preuves*, p. 106f.

[423] A VI, 1, p. 139.

between *jus nullum* and *jus purum*, or between zero and one. It is uncertain or contingent and has to be estimated by the judge.[424]

Thus the judge has to estimate the magnitude of conditional right in relation to absolute right, that is of the part to the whole. It is easy to see that Leibniz had probability in mind here besides modal logic.[425] Furthermore, he discussed games of chance later in the disputation.

The second part of *De Conditionibus* also contains a fictional example: "Presupposing that a person receives 100 Taler under condition A and 200 Taler under condition B, then the conditional right depending on B is assigned a higher value than that depending on A, if the occurrence of A and B is equally uncertain."[426] One had to compare conditions A and B and decide which was more probable in relation to the case at hand. One might estimate, for example, the condition and circumstances of a ship's voyage and decide whether or not it was probable that it would return. It might be safe to invest in a less ludicrous business venture if the probability of success were greater (condition A). Then again, the potential profit was greater under more uncertain conditions (condition B). The estimation of the probability of different occurrences is presented here as a method for choosing between different and perhaps conflicting options – as a method of rational decision.

In his many drafts of *Elementa juris naturalis* (1671) Leibniz argued in a similar manner, but applies probability based on internal evidence. He took as an example a case in which the question is of a choice between two actions, A and B, taking into account the probability of the occurrence of an effect stemming from the action and the weight of this effect.[427] Thus he took the probability of the effect as one criterion and its goodness as the

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[424] Schneider, *Leibniz on the Probable*, p. 202.

[425] On modal features of *De Conditionibus*, see Schepers, *Leibniz' Disputationen "De Conditionibus": Ansätze zu einer juristischen Aussagenlogik.*

[426] "123. Quo pluris est Ctum, hoc jus Cle est majus. Puta si A erit, 100 habeto; si B, 200. Supposito A et B esse aequè incerta, pluris est Co B quàm A." A VI, 1, p. 140. Schneider, *Leibniz on the Probable*, p. 203.

[427] Schneider, *Leibniz on the Probable*, p. 203.

second.[428] The values of these criteria are to be multiplied, not summed up, since it is not a question of their combined effect (as would be the case in weighing up reasons or summing up evidence), but rather concerns the outcome of their mutual effect.

The effect following of action A in Leibniz's example has a probability value of five, while the goodness of the effect has a value of four, thus by multiplication A produces an overall value of 20. The effect of action B, on the other hand, has a probability value of six and a goodness value of three, thus the overall value is 18.[429] In both cases summing up the values would produce a value of nine, but multiplication indicates a difference between the options. While the effect of action A is less probable it produces more goodness, and while action B produces less goodness, its effect is more probable. Given that the deciding factor is the overall value, action A is recommended.

The above examples of estimating probability concern two different kinds of cases. The first is a typical legal case in which the judge has to decide whether or not the accused is guilty by summing up proofs carrying different weights. The second case is more complicated, involving several values that have to be estimated separately and which are competing against each other. The decision has to be made by evaluating different options from different points of view and estimating their total value, which includes not only the probability of their effect regarding a given goal, but also their inherent goodness.

I will return to these two different kinds of cases in Chapter 11.

7. Summary of Part II

Part II has focused on the presuppositions of human rational decisions. As discussed in Part I, divine decision is founded on the fact that by His infinite understanding God finds sufficient reason to choose one possible world rather than another. Human deliberation acts in an analogous way with one significant difference – humans have only limited cognitive abilities.

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[428] A VI, I, p. 471.
[429] Ibid.

Nevertheless, Leibniz held that they should develop their understanding and imitate God in their decisions as far as possible. In order to help them in this task he conceived various ways of dealing with the state of uncertainty that is common in human deliberations.

Chapter four set out the essentials of Leibniz's theory of reasoning. The main principles, such as the distinction between truths of reason and truths of fact, the identity of indiscernibles, the predicate-in-subject-principle and the principle of sufficient reason, apply to both God and man. In man they are related to innate ideas which form the basis for mathematics, logic and ethics. Of special significance to human practical action is the moral instinct of pursuing joy and avoiding sorrow, which is an innate disposition in the mind. I devoted a large part of this chapter to cognition in general, and to some special questions related to it such as minute perceptions, the moral instinct, and questions of apperception, imagination, attention, memory and moral identity. This provided essential background information for my discussion on human deliberation in Part III.

Of special interest is the question of apperception, which Leibniz left largely unexplained and for this reason it has been a problematic topic for Leibniz scholars. My discussion of the subject constitutes the most extensive critical account in this part of my study. I supported the view of Robert McRae, according to which apperception requires innate ideas, against Nicholas Jolley's and Mark Kulstad's views that there is also some awareness in minute perceptions. I have argued that the concept of attention is not sufficiently taken into account in most commentaries on apperception, and that the notion of internal sense or imagination is helpful in understanding the connection between external objects and innate ideas. I also critically examined Kulstad's view that animals are capable of minimal apperceptions.

I concentrated on truths of fact in Chapters five and six and examined the various ways in which Leibniz tried to improve methods of reasoning about them. Chapter five described Leibniz's various schemes involving general science, his deductive encyclopedia and the art of discovery. I also briefly discussed Marcelo Dascal's concept of "soft" reason (*blandior ratio*), which, I

think is essential in understanding Leibniz's views on practical reasoning.

Chapter six is devoted to the theory of probability, which was Leibniz's main method for dealing with contingent truths. A substantial part of the chapter deals with the history of probabilistic considerations, my aim being to show that he was well aware of current developments, and that his writings reflect the views of both the mathematical probabilists and the moral theologians who discussed these themes. At the end of the Chapter I offered some case studies showing that Leibniz was interested in both the calculative and the estimative theory of probability. Of special relevance to the discussion in Part III are the legal examples, which cover two kinds of cases: simple ones in which the judge has to decide between different options by weighing up proofs, and more complicated ones incorporating several values that have to be estimated separately, and which compete against each other. As I will argue, Leibniz thought that this disctinction applied to human deliberations in general.

Part III

Human Rational Decision-Making

8. Practical Reason and Human Action

The foundation of human deliberation is practical reason, which is the general human capacity for resolving, through reflection, the question of what one is to do.[430] The classical theorist on practical reason was Aristotle, who argued that humans differed from other animals in having the capability to use reason.

The human soul is divided into rational and irrational parts. The virtues of the rational soul, or the intellect are divided between theoretical wisdom (*sophia*) and practical reason (*phronēsis*). Of these two, the former is more important: practical reason deals with temporary states of things while theoretical reason concerns permanent things.[431]

According to Aristotle, it is essential for humans to plan and deliberate, and in general to control their actions. Practical reason is used to decide on each occasion which course of action is most reasonable. Living well or achieving *eudaimonia* or happiness, which is the goal of Aristotle's ethics, means acting in accordance with virtue, which is a mediating course between excess and deficiency and is different in each new situation.[432]

Achieving happiness is possible for persons of good education. They have been habituated to apply their reason appropriately and

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[430] Wallace, R. Jay, "Practical Reason", *The Stanford Encyclopedia of Philosophy (Winter 2003 Edition)*, Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/win2003/entries/ practical-reason/>

[431] On the differencies between these two kinds of reason, see Aristotle, *Nicomachean Ethics* VI, ch. VII.

[432] Ibid., II, ch. 6.

to keep the irrational soul in control – in other words, they have a good character. A good person is good at deliberation – he or she finds the most appropriate course of action in pursuit of happiness, in other words, he or she has practical wisdom.[433]

Deliberation, in the light of Aristotle's examples, usually concerns the means and not the ends, although he also left room for ends. He argued in the 10th Chapter of the first book of *Rhetoric* that any action is either based on deliberation or it is not. If it is so based, it is called rational, and if not it is an emotive response that is connected to the irrational soul (1369 1-5, 15-19, 1369b 18-20). Acting according to emotions is not necessarily evil - it is just not based on deliberation.

Leibniz's views were influenced by Aristotle and Thomas Aquinas, but he also added some new elements, such as the pluralism of values in practical rationality and the theory of estimating the probabilities of consequences of proposed acts. I will return to these themes in the next Chapter – here I limit myself to Leibniz's views on practical rationality in general.

The most distinctive Leibnizian feature of practical rationality is that the divine rational choice of the best of all possible worlds is a model for all rational choices – it is based on the comparison of different possible worlds, the best one providing the sufficient reason for its realisation by God. Divine and human deliberations are similar in kind, and differ only in degree. Humans strive to imitate the divine being in their actions within the limits of their cognitive capabilities:

> "…the quality that God has of being a mind himself takes precedence over all the other considerations he can have towards creatures; only minds are made in his image and are, as it were, of his race or like children of his household, since they alone can serve him freely and act with knowledge in imitation of the divine nature; a single mind is worth a whole world, since it does not merely express the world but it also knows it and it governs itself after the fashion of God."[434]

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[433] Ibid., VI, ch. 13.

[434] "…la qualité que Dieu a d'estre Esprit luy même, va devant toutes les autres considerations qu'il peut avoir à l'egard des creatures; les seuls

It is noteworthy, however, that the degree of cognition between finite beings and God is tremendous - as we discussed in Part II, God is able to perform infinite analysis, which gives Him the possibility of seeing beforehand the whole history of the world. Men are always limited in their cognitive abilities, and their judgement is necessarily affected by confused, minute perceptions.

A degree of cognition is essential in practical deliberations since the will of a moral agent is always directed to the apparent good.[435] The will usually follows the recommendations for action made by the intellect, and therefore it is essential that our judgements are valid. As I will show, it is usual for men to err in their assessment of goods, taking the apparent good to be the real good. The will concerns the good that seems best to the deliberator, and the real good is what the agent should wish for and choose. While God always chooses the real good, men may choose one that is not real although it may seem so to the deliberator. Thus correct moral reasoning is of utmost importance in good moral conduct.

Although the Leibnizian human deliberator cannot gain absolutely certain knowledge of the world, he or she should perform rational decisions whenever possible. In this respect it is essential to distinguish between the notions of practical rationality and morality. When a person makes a moral choice, the choice may be more or less appropriate in the situation, depending on the degree of cognition involved. However, the moral act is rational if it is based on reasoning within the limits of the abilities of the person concerned, taking into account all the relevant facts. Therefore people may act rationally even though the chosen act is not the appropriate choice in the situation, and has unfortunate consequences. In other words, men are able to deliberate rationally whether or not their moral judgements are accurate.

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esprits sont faits à son image, et quasi de sa race ou comme enfans de la maison, puisqu'eux seuls le peuvent servir librement et agir avec connoissance à l'imitation de la nature divine. Un seul esprit vaut tout un Monde, puisqu'il ne l'exprime pas seulement, mais le connoist aussi, et s'y gouverne à la façon de Dieu." (*Discours de metaphysique*, §36) A VI, 4, p. 1586; AG, p. 67. See also *La Monadologie,* §90 and *La Felicite*, Gr, p. 581.

[435] See *Discours de metaphysique*, §13.

9. Leibniz's Moral Philosophy

In his views of the good as appropriate to men, Leibniz followed the Aristotelian tradition, especially as represented by Thomas Aquinas: the human good is a state of activity involving the actualisation of the potentialities specific to human beings. Medieval philosophers called this state or activity "happiness", or "beatitude", and regarded ethics as a branch of philosophy devoted to specifying the precise nature of happiness and the means of attaining it.[436] As I will show, Leibniz considered happiness to be a state of lasting joy and the goal of virtuous action. A virtuous man could distinguish apparent good from real good and resist harmful passions. Before turning to the good appropriate to man I will consider Leibniz's views on the nature of moral reasoning.

Like Aristotle, Leibniz thought that the right action to be taken in practical life was discovered through reasoning. However, he believed that moral reasoning (illumination) could be supplemented by the moral instinct of pursuing joy and avoiding sorrow, which was perceived by the deliberator (through the imagination, discussed in Chapter 4.3.3.) confusedly as a sense of increasing perfection or decreasing it. He discussed the matter in *Nouveaux essais*, Book I, Chapter ii, in which he stated (against Locke's claim that morality was a demonstrative science):

> "Although it is correct to say that morality has indemonstrable principles, of which one of the first and most practical is that we should pursue joy and avoid sorrow, it must be added that it is not a truth that known solely from reason, since it is based on inner experience – on confused knowledge; for one only senses what joy and sorrow are." [437]

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[436] MacDonald, *Being and Goodness*, p. 19.

[437] "…quoyqu'on puisse dire veritablement, que la morale a des principes indemonstrables, et qu'un des premiers et des plus pratiques est, qu'il faut suivre la joye et eviter la tristesse, il faut adjouter que ce n'est pas une verité, qui soit connue purement de raison, puisqu'elle est fondée sur

This most practical indemonstrable principle is moral instinct, which is not a truth of reason, but we can draw scientific conclusions from it, and the truths revealed by moral instinct are so self-evident that they are clear to everyone.[438] In §3 he stated, "…a penchant expressed by the understanding becomes a precept or practical truth; and if the penchant is innate then so also is the truth – there being nothing in the soul that is not expressed in the understanding, although not always in distinct actual thinking, as I have sufficiently shown."[439] The gist of Leibniz's argumentation is clear: moral action can in practice function without reasoning in a demanding sense, although moral science depends on it:

> "…moral science … is innate in just the same way that arithmetic is, for it, too, depends upon demonstrations provided by the inner light. Since demonstrations do not spring into view straight away, it is no great wonder that if men do not always apperceive straight away everything they have within them, and are not very quick to read the characters of the natural law, which according to St. Paul, God has engraved in their minds. However, since morality is more important than arithmetic, God has given to man instincts that lead, straight away and without reasoning, to part of what reason commands."[440]

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l'experience interne, ou sur des connoissances confuses, car on ne sent pas ce que c'est que la joye et la tristesse." A VI, 6, p. 88; RB, p. 88.

[438] A VI, 6, p. 88.

[439] "…le penchant exprimé par l'entendement passe en precepte, ou verité de pratique: et si le penchant est inné, la verité l'est aussi, n'y ayant rien dans l'ame qui ne soit exprimé dans l'entendement mains non pas tousjours par une consideration actuelle distincte, comme j'ay assez fait voir." A VI, 6, p. 90; RB, p. 90.

[440] "La science Morale … n'est pas autrement innée que l'Arithmetique. Car elle depend aussi des demonstrations que la lumiere interne fournit. Et comme les demonstrations ne sautent pas d'abord aux yeux, ce n'est pas grande merveille, si les hommes ne s'apperçoivent pas tousjours et d'abord de tout ce qu'ils possedent en eux, et ne lisent pas assés promtement les caracteres de la loi naturelle, que Dieu selon S. Paul a gravé dans leur esprits. Cependant comme la Morale est plus importante que l'Arithmetique, Dieu a donné à l'homme des instincts qui portent d'abord et sans raisonnement à quelque chose de ce que la raison ordonne." A VI, 6, p. 92; RB, p. 92. In a memoir *Consilium de encyclopaedia*

Bearing in mind the distinction between hard and soft rationality, discussed in Chapter 5, it seems clear that Leibniz was allowing for "softer" reasoning with respect to moral deliberation here. Although acting on moral instinct is rational in some sense (it is related to innate ideas), it is still far from demonstrative moral knowledge. One could say that the moral agent almost always acts in a state of uncertainty.

Not surprisingly, however, the precepts received from moral instinct are less powerful than the ones provided by the inner light: "…these instincts do not irresistibly impel us to act: our passions lead us to resist them, our prejudices obscure them, and contrary customs distort them. Usually, though, we accede to these instincts of conscience, and even follow them whenever stronger feelings do not overcome them."[441]

Hence Leibniz considered it important to find firm foundations for ethics and to replace soft reasoning with demonstrative reasoning – a goal that is evident in many ethical fragments in which he sought definitions for moral concepts. His aim was to systematise moral philosophy (especially the theory of justice), and to analyse it into the simplest principles. For example, in a letter to Ernst August he wrote:

> "Justice is the charity of the wise or a charity confirming to wisdom. Charity is nothing else than general benevolence. Wisdom is the science of happiness. Happiness is a durable state of joy. Joy is a sentiment of perfection. Perfection is the degree of reality."[442]

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nova conscribenda methodo inventoria (1679) Leibniz defined moral science as science of the mind and its movements. See Leibniz, *Art of Controversies*, p. 139.

[441] "Mais ces instincts ne portent pas à l'action d'une maniere invincible; on y resiste par des passions, on les obscurcit par des prejugés et on les altere par des coustumes contraires. Cependant on convient le plus souvent de ces instincts de la conscience et on les suit même quand de plus grandes impressions ne les surmontent." A VI, 6, pp. 92-93; RB, pp. 92-93.

[442] "La justice est la charité du sage; ou une charité conforme à la sagesse. La Charité n'est autre chose que la bienveillance generale. La Sagesse c'est la science de la felicité. La Felicité est l'estat de joye durable. La Joye c'est

In an ideal case, when the agent is wise enough to distinguish between real and apparent goods, goodness and perfection are two inseparable terms.[443] The goal of ethics is to make rational decisions and to provide the basis for politics.[444]

The fact that in his approach to ethics Leibniz was a consequentialist complicated the process of moral reasoning. The right action produces pleasure and happiness, and people should try to calculate or estimate the consequences of their actions in order to find the best alternative, bearing in mind the notion of universal perfection. In this sense in his ethics he was proto-utilitarist – the best actions produce as much universal perfection as possible.

9. 1. Goodness, Love, Justice and Pleasure

Leibniz gave various definitions of goodness. In *Essais de Theodicée*, §209 he stated that perfection includes three different kinds of goodness: physical goodness consisting of pleasure, moral goodness consisting of virtue, and metaphysical goodness consisting of reality.[445] Metaphysical goodness was discussed in Chapter 2.5. – here I will concentrate on moral and physical goodness.

Perhaps the most important property of goodness in general is universality. Leibniz believed that what was good and just was objectively so and not decided by God, as he explained in *Meditationes sur la notion commune de la justice* (1702-03):

> "It is agreed that whatever God wills is good and just. But there remains the question whether it is good and just because God wills it or whether God wills it because it is good and just: in other words, whether justice and goodness are arbitrary or whether they

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un sentiment du perfection. La Perfection c'est la degré de realité." (a letter to Ernst August) A I, 4, p. 315.

[443] Nicolas, *La rationalité morale du monde chez Leibniz*, p. 163.

[444] On the relationship between Leibniz's ethics and politics, see Naert, *La pensée politique de Leibniz*.

[445] G VI, p. 242.

> belong to the necessary and eternal truths about the nature of things, as do numbers and proportions."[446]

This question, raised in Plato's *Euthypro*, is taken up in many of Leibniz's legal and political writings, and he consistently chose the latter alternative.[447] For him the good was normative and one should strive towards it within the limits of one's abilities.[448] The understanding and the will of the moral agent was always directed to the apparent good and if one was enlightened enough, one could recognise the real good in most situations. Choosing good freely brings joy and this motivates the agent to act virtuously.

Although Leibniz held the view that the moral agent was, at best, drawn to intellectual pleasures representing moral egoism, he argued that another theory was needed that defined the relations between human beings. This he provided with his original theories of love and justice. He typically tried to reconcile egoism and altruism in his practical philosophy. However, he considered the primary motivation for action to be egoistical:

> "Goodness is simply the inclination to do good for everyone, and to arrest evil, at least when it is not necessary for a greater good or to arrest a greater evil."[449]

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446 "On convient que tout ce que Dieu veut est bon et juste. Mais on demande s'il est bon et juste par ce que Dieu le veut ou si Dieu le veut par ce qu'il est bon et juste: c'est-à-dire si la justice ou la bonté est arbitraire, ou si elle consiste dans les verités necessaires et eternelles de la nature des choses, comme les nombres et les proportions." M, p. 56; Leibniz, *Political Writings*, p. 45

447 Platos's *Eutphyro* was also discussed by Hugo Grotius, one of Leibiz's heroes, in his *De Jure Belli ac Pacis* I, I, x. Leibniz, *Political Writings*, p. 9.

448 See Heinekamp, *Das Problem des Guten bei Leibniz*, pp. 96-97.

1 "…la bonté n'est autre chose que l'inclination à faire du bien à tous, et à empecher le mal, à moins qu'il ne soit necessaire pour un plus grand bien ou pour empecher un plus grand mal." (*Meditationes sur la notion commune de la justice*) M, p. 62; Leibniz, *Political Writings*, p. 50. The inclination Leibniz mentioned here is connected to moral instinct in *Nouveaux essais* I, ii, §2. Thus moral instinct is also important in his social thought. See Naaman Zauderer, *Rethinking Leibniz's Notions of Justice, Love and Human Motives*, pp. 674-75.

Leibniz argued in his theory of love that one should do good to everyone, since it is in this way that one's own intellectual pleasures are increased. Love is simply the joy or sentiment of increasing perfection that follows from other people's happiness - it is one's own and the other's happiness combined.[450] When one person does good for another he or she senses the increase in perfection in the world and is pleased by the other person's happiness. This pleasure is love, and consequently, he or she loves the other person.

Love, despite its egoistic component, is disinterested because the joy one receives is represented by one's object of love.[451] Loving God gives us the greatest pleasure, since our innate ideas represent Him, and by loving our neighbours we will contribute to His glory which in turn makes Him love us even more.

> "Love is the affection that makes us take pleasure in the perfection of the object of our love, and there is nothing more perfect than God, nor any greater delight than in Him. To love Him it suffices to envisage His perfection, which is easy indeed, because we find such within ourselves."[452]

Leibniz's theory has been recently challenged by Noa Naaman Zauderer. She asks: "How can a man act justly, if his principal motive is gaining pleasure?" I think this is a justified question and one to which Leibniz had no direct answer, although it is clear that he considered the attainment of pleasure not to be the only motive for human action. As Naaman Zauderer goes on to argue, one

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450 On definitions of love, see, for example G II, p. 577, G VI, p. 27 and G VII, p. 547.

451 "…on ne considere et ne demande point d'autre plaisir propre que celuy là même, qu'on trouve dans le bien ou plaisir de celuy qu'on aime; mais dans ce sens nous n'aimons point proprement ce qui est incapable de plaisir ou de bonheur, et nous joissons des choses de cette nature sans les aimer pour cela…" (*Nouveaux essais* II, xx, §5) A VI, 6, p. 163; RB p. 163.

452 "L'Amour est cette affection qui nous fait trouver du plaisir dans les perfections de ce qu'on aime, et il n'y a rien de plus parfait que Dieu, ny rien de plus charmant. Pour l'aimer, il suffit d'en envisager les perfections, ce qui est aisé, parce que nous trouvons en nous leur idées." (*Essais de Théodicée,* preface) G VI, p. 27; H, p. 51.

might construct an answer along the following lines: acting for both egoistical as well as altruistic reasons is acceptable and provides pleasure to the mind as long as we act in the right way. [453] To connect this interpretation to my view, one could say that one can act correctly by moral instinct without really reasoning about the relevant facts of the matter. Thus Leibniz would seem to allow for both kinds of motives in human moral action.

This would appear to be justified, but I think Leibniz would have favoured the latter, more demanding alternative. Although the former action is rational in some sense, the latter is virtuous, as we will shortly see. In this respect, an interesting point of comparison is his support of probabiliorism against probabilism (see Chapter 6.2.2.). Perhaps one could say by way of analogy, that he thought one should find the right way to act according to the nature of things (by finding the source of the pleasure gained from a morally right act) rather than choose a morally safe option (doing the thing that has been generally accepted).

Leibniz's version of the golden rule gave a more social dimension to love. He discussed this in a short tract entitled *La place d'autruy*, claiming at the beginning that *la place d'autruy* was the right point of view in politics as well as in morals.[454] We should put ourselves, or imagine ourselves, in the place of the other, which was the maxim of Jesus Christ. We should go against Hobbes in assuming that our neighbour is a friend and not an enemy.[455]

By placing ourselves in the position of others we would sense the perfection in them which would give us pleasure and create love in us. This principle would give us a new moral and legal point of view.[456] It works in degrees: the more we take in other

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[453] Naaman Zauderer, *Rethinking Leibniz's Notions of Justice, Love and Human Motives*.

[454] Gr, p. 699.

[455] Leibniz did not accept anthropological assumptions such as *homo homini lupus* or *bellum omnium contra omnes*. Gil, *Leibniz, la place d'autrui, le principle du pire et la politique de la La Monadologie*, p. 151.

[456] "Ainsi on peut dire que la place d'autruy en morale comme en politique est une place propre à nous faire decouvrir des considerations qui sans cela ne nous seroient point venues, et que tout ce que nous

points of view, the greater our wisdom. Divine understanding, of course, incorporates the viewpoint of all the spirits. We should therefore strive to adopt the broadest possible perspective (without ignoring our own) in order to fully understand the consequences of our moral actions. Leibniz used the principle of *la place d'autruy* as a heuristic device for furthering understanding of the world and justice. This principle has been compared with Kant's categorical imperative.[457]

Combining the concepts of love and wisdom allows the concept of justice to emerge. Leibniz defined justice as the habit of loving as long as it is in accordance with wisdom, in other words as *caritas sapientas*, charity or love practised by a wise man. It implies rational activity for the common good – it means living virtuously. Thus the maintenance of other people's well-being is a means for increasing universal perfection. Morality and justice work side by side towards increasing perfection in the world, and thus egoism and altruism are combined in Leibniz's view of rational action. [458]

He attempted to bring together the two alternative interpretations of natural law that were dominant in his day. Hugo Grotius thought that the desire for society, *appetitus societatis*, would make men place

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trouverions injuste si nous etions à la place d'autruy nous doit paroistre suspect d'injustice." (Gr, p. 701) In *Meditationes sur la notion commune de la justice* he argued that the judge must put himself not only in the place of the criminal but also in that of the others whose interest lies in the crime being punished. Leibniz, *Political Writings*, p. 56.

[457] Dascal, *One Adam and Many Cultures*, p. 403.

[458] In a short memoir *On generosity* Leibniz defined generosity as the virtue that drives us to perform actions that are worthy of our kind, or our origin, which is heavenly. The generous person is extraordinarily virtuous, and avoids any sins or injustices, is suspicious of everything that is made easy, avoids all basic things available to every man, and every course of action that includes self-interest. He argued that justice is the soul of generosity. By following God's intentions to promote general welfare and pride in our own deeds we become generous. A VI, 4, pp. 2718-21; Leibniz, *On Generosity*, p. 18-19. For some reason, he never returned to this theme in his later writings, although the general compatibility with his other ethical work is evident. Rutherford, *Leibniz's "On Generosity"*, p. 17.

the good of society before their own short-term interests. Hobbes, on the other hand, believed that all society was bent on gain, or on glory – in other words driven not so much by love for its fellow members as by self-love. Leibniz was sure that the Grotian and Hobbesian views could be easily reconciled. He used his version of the golden rule as a standpoint and broadened it to include charity to fellow men in the form of love. He attempted to show that there was reason for complaint not only when one person was harmed by another, but also when one person was not helped to obtain a great good by another who could do so without significant loss to himself.

Leibniz summed up the themes we have discussed above in *Initia et specimina scientia novae generalis* as follows:

> "He who has wisdom loves everybody. He who has wisdom seeks the benefit of all. He who has wisdom gains a lot. He who has wisdom is a friend of God. God's friend has happiness...He who has wisdom is righteous. He who is righteous has happiness."[459]

Thus, goodness had a strong emotional effect on Leibniz's ethics. He defined joy as a sentiment [*sentiment, voluptas, delectatio*] of increasing perfection.[460] Consequently, the soul feels togetherness, order, freedom and power.[461] The sentiment of increasing perfection is connected to the pleasure of the mind, that is a clear but confused perception of perfection or harmony.

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[21]"Wer die Weisheit hat, liebet alle. Wer Weishat hat, sucht aller nuzen. Wer Weishat hat, nuzet vielen. Wer Weishat hat, ist ein Freund Gottes. Ein Freund Gottes ist glückseelig...Wer Weishat hat, ist gerecht. Wer gerecht ist, ist glückseelig." G VII, p. 77.

[460] See a letter to Ernst August, A I, 4, p. 315. The term sentiment has many meanings in Leibniz's philosophy – it may refer to pain or joy, sense perception and representation in the same sense as images or appereances do. For discussion, see McRae, *Leibniz: Perception, Apperception, and Thought*, p. 29.

[461] "Wenn nun die Seele in ihr selbst eine grosse zusammenstimmung, ordnung, freyheit, krafft oder vollkommenheit fühlet, und folglich daran lust empfindet, so verursachet solches eine Freude, wie auss allen diesen und obigen erclärungen abznehmen." (*Initia et specimina Scientiae novae Generalis*) G VII, p. 88.

Enjoying the good or the perfection that forms the pleasure of the mind is a major theme in his ethics. He defined pleasure in *Nouveaux essais*, II, xxi, §42 as follows:

> "Now, although pleasure cannot be given a nominal definition, any more than light or colour can, it can like them be defined causally: I believe that, fundamentally, pleasure is a sentiment of perfection, and pain a sentiment of imperfection, provided that each is notable enough to be apperceived."[462]

The sentiment of increasing perfection should be intense enough and last long enough for the mind to notice, reflect on and apperceive it.[463] It is to be distinguished from sensation, which is a perception accompanied by a memory. To be affected by it requires innate ideas and, in particular, a moral instinct.

This feature of Leibniz's philosophy of emotions draws influences not only from Aquinas,[464] but also from Spinoza, who thought that when our power to maintain self-preservation increased, we would feel joy (pleasure) and when it decreased we would feel sadness (pain). In his definition of joy [*laetitia*] Spinoza argues that moving from inadequate ideas (smaller perfection) to adequate ideas (greater perfection) increases our power and consequently our joy and therefore we should increase our knowledge of God or nature.[465] The joy comes in degrees – the more adequate ideas we have, the more perfect we will become and the more we will understand God or nature. Passions are

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[462] "Or quoyque le plaisir ne puisse point recevoir une definition nominale, non plus que la lumiere, ou la chaleur; il en peut pourtant recevoir une causale, comme elles; et je crois que dans le fonds, le plaisir est un sentiment de perfection, et la douleur un sentiment d'imperfection; mais qui soit si notable, qu'on s'en puisse apercevoir…" A VI, 6, p. 194; RB, p. 194. On the different pleasures possible for a spirit, see Grua, *La justice humaine selon Leibniz*, p. 51. Of pleasure and happiness, see also Rutherford, *Leibniz and the Rational Order of Nature*, p. 49f.

[463] In *Nouveaux essais* (II, xx, §1) Leibniz stated that pleasure and pain appear to consist in notable helps and hindrances. A VI, 6, p. 162.

[464] On Aquinas' views on emotions, see Knuuttila, *Emotions in Ancient and Medieval Philosophy*, pp. 239-55.

[465] See Spinoza, *Ethics* III, prop. XI, Scholium.

usually confused ideas that cause suffering to the mind, which in turn produce sadness and inactivity.[466]

According to Leibniz, activity brings pleasure and passivity brings pain. Joy makes men alert, active and hopeful of further success.[467] However, as the distinctness of perceptions is a matter of degree, activity also comes in degrees.[468] The more distinctly a substance perceives, the more active it is, and at the same time, it is more perfect. The passive substance has proportionally more confused than clear perceptions in cognition, and less perfection.[469]

> "[Joy] appears to me to signify a state in which pleasure predominates in us; for during the deepest sorrow and amidst sharpest anguish one can have some pleasure, e.g., from drinking or from hearing music,

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[466] Leibniz mentioned in a letter to Placcius of February 1678 that Spinoza said many good things about the emotions. Kneale, *Leibniz and Spinoza on Activity*, p. 220. Another influence may have been the Renaissance scholar Lorenzo Valla, who belonged to the Epicurean tradition and whose work *De Voluptate* was an attempt to achieve a synthesis between Christian virtues and pleasure. On the influence of Valla, see Grua, *La justice humaine selon Leibniz*, p. 43f and Piro, *Leibniz and Ethics: the Years 1669-72*, p. 157. Leibniz may also have been influenced by Malebranche, whose view was that humans could reach happiness by loving the divine order for its own sake. The pure rational love of order is the sole principle of merit we could gain, and feeling was an important factor in deliberation. For a discussion on Malebranche's views of the soul, see Jolley, *Malebranche on the soul*.

[467] NE II, xx, §8, A VI, 6, p. 167.

[468] "…je croy qu'on peut dire que celle qui immediatement par là passe à un plus grand degré de perfection ou à une expression plus parfaite, exerce sa puissance, et agit, et celle qui passe à un moindre degré fait connoistre sa foiblesse, et patit. Aussi tiens je que toute action d'une substance qui a de la perception importe quelque volupté, et toute passion quelque douleur, et vice versa…" G IV, p. 441; L, p. 313. This view could be compared to Leibniz's conception of death in *La Monadologie*, §73, where he described death as envelopments and diminuations, and generation as developments and increases. G VI, p. 619. He did not specify what these changes concerned. The context gives the impression that the question was one of substance.

[469] See *La Monadologie*, §49-50 and Calabi, *Leibnizian Pleasures*, p. 243.

> although displeasure dominates; and similarly in the midst of the most acute agony the mind can be joyful, as happened with martyrs."[470]

As mentioned previously, the sentiment of increasing perfection requires that the perceptions are notable enough to be apperceived. This does not necessarily mean that single perceptions should be clear and distinct. Various passages in *Nouveaux essais* make it clear that minute perceptions may combine to make themselves notable:

> "This account about tiny aids, imperceptible little escapes and releases of a thwarted endeavour, which finally generate notable pleasure, also provides somewhat more distinct knowledge of our inevitably confused ideas of pleasure and of pain…"[471]

The clear but confused perception of perfection corresponds with our moral instinct through the imagination in the manner discussed in Chapter 4.3.3. In this way outer objects can create a sentiment of increasing perfection in us.[472] This increase in perfection corresponds with the moral identity of man, and this is why animals cannot experience moral motives.

However, there are also more dangerous inclinations. At every moment outer objects may give rise to vivacious confused perceptions, in other words, sensual pleasures (for example,

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[470] "…elle me paroist signifier un estat où le plaisir predomine en nous, car pendant la plus profonde tristesse, et au milieu des plus cuisans chagrins on peut prendre quelque plaisir, comme de boire ou d'entendre la Musique, mais le deplaisir predomine; et de même au milieu des plus aigües douleurs, l'esprit peut estre dans la joye, ce qui arrivoit aux martirs." (*Nouveaux essais*, II, xx, §7). A VI, 6, p. 166; RB, p. 166. See also *De publica felicitate*, Gr, p. 613.

[471] "Cette consideration des petites aides ou petites deliverances et degagemens imperceptibles de la tendance arretée, dont resulte enfin un plaisir notable, sert aussi à donner quelque connoissance plus distincte de l'idée confuse que nous avons et devons avoir du plaisir et de la douleur..." A VI, 6, p. 165; RB, p. 165.

[472] "Le plaisir est <une connoissance ou> [Un] sentiment de <la> perfection [ou ordre] non seulement en nous, mais aussi en autruy, car alors on excite encor quelque perfection <en nous>. (*La Félicité*) Gr, p. 579.

odours and visions) comprising inclinations that may lead us to strive for wrong goals. According to Donald Rutherford, the pleasures of the senses have two problems: first, they are not to be trusted – what appears good often turns out not to be - and secondly, they are inconstant – they have to be renewed often in order to maintain their quality.[473] Physical goodness also includes other things than pleasures, however: Leibniz argued in *Essais de Theodicée*, §251 that it also includes well-being, such as health.[474]

The pleasure of the mind, in fact, arises from clear and distinct perceptions, which occur "in the knowledge and production of order and harmony."[475] Leibniz argued that we obtain subjective pleasure from our increased understanding of the world, which is a result of an increase in clearness and distinctness and a decrease in confused elements in our cognition. Pleasure is thus also activity, since the increase in perfection is identical with it. When perfection is perceived in terms of clear and distinct ideas one could speak of intellectual pleasures in which the fundamentals of reality are found. This kind of pleasure is far superior to merely clear but confused ideas of perfection, and makes us truly appreciate and love God's creation. [476]

The perception of increasing perfection could also arise from other minds that we love. This has to do with Leibniz's theory that substances represented and mirrored the rest of the universe. The representation of increasing perfection in other substances

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[473] Rutherford, *Leibniz and the Rational Order of Nature*, p. 50.

[474] G VI, p. 266.

[475] "...les plaisirs de cette nature, qui se trouvent dans la connoissance et production de l'ordre et harmonie sont les plus estimables." (*Nouveaux essais* II, xxi, §41). A VI, 6, pp. 194-195; RB, pp. 194-95.

[476] See, for example, *Essais de Theodicée*, §278, G VI, p. 282 and PNG, §18, where Leibniz argued that supreme happiness is a beatific vision, although imperfect in some respects: "Il est vray que la supreme felicité (de quelque vision beatifique, ou connoissance de Dieu, qu'elle soit accompagnée) ne sauroit jamais être pleine, parce que Dieu étant infini, ne sauroit être connu entierement." G VI, p. 606. Anselm regarded the contemplation of God as the perfection of human rationalism. On medieval conceptions of happiness, see Kretzmann et al. (ed), *The Cambridge History of Later Medieval Philosophy*, p. 673f.

intensified pleasure. For example, in *Elementa juris naturalis* he described the essence of pleasure as follows:

> "Delight, however, is doubled by reflection, whenever we contemplate the beauty within ourselves that our conscience makes, not to speak of our virtue. But as a double refraction can occur in the vision, once in the lens of the eye and once in the lens of a tube, the latter increasing the vision of the former, so there is a double reflection in thinking. For every mind is something like a mirror, and one mirror is in our mind, another in the mind of someone else. So if there are many mirrors, that is many minds recognizing our goods, there will be a greater light, the mirrors blending the light not only in the eye but also among each other. The gathered splendour constitutes glory."[477]

Pleasure intensifies with each reflection and this is how the universal progress of perfection may proceed.[478] Perfection in general, or metaphysical perfection, is perceived by humans as continuity and harmony. As mentioned in Chapter 2, perfection is usually defined by Leibniz as unity in multiplicity. If the perception is harmonious, that is it expresses the richness of phenomena within simple laws, it gives us pleasure.[479] Disorder, in contrast, gives us pain. An increase in perfection is more often felt than understood due to its complicated nature, and in these cases it is the moral instinct that is active.

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[477] "Duplicatur autem jucunditas reflexione, qvoties contemplamur pulchritudinem ipsi nostram, qvod fit conscientia tacita virtutis nostrae. Sed qvemadmodum duplex in visu refractio contingere potest, altera in lente oculi, altera in lente tubi, qvarum haec illam auget, ita duplex in cogitando reflexio est, cum enim omnis mens habeat speculi instar, alterum erit in mente nostra, alterum in aliena, et si plura sint specula, id est plures mentes bonorum nostrorum agnitrices, major lux erit, miscentisbus speculis non tantum in oculo lucem, sed et inter se, splendor collectus gloriam facit." A VI, 1, p. 464; L, p. 137.

[478] In a letter to Arnauld from 1671 Leibniz argued that pleasure is multiplied and not added up when one acts for the good of others. See A II, 1, p. 174.

[479] Relying on different sources from Leibniz, Gaston Grua said: "Pleasure is perception of harmony, feeling of harmony or harmony in a feeling." Grua, *La justice humaine selon Leibniz*, p. 48.

> "We do not always observe of what the perfection of pleasing things consist, or what kind of perfection within ourselves they serve, yet our character [gemüt] perceives it, even though our understanding does not. We commonly say, "There is something, I know not what, that pleases me in the matter."[480]

As an example Leibniz mentioned music.[481] Harmony has strong aesthetic values, and meditation on beauty (in God's creation, for example) gives us the greatest pleasure. He stated in *Résumé of Metaphysics* (ca. 1697) that "an intelligent being's pleasure is simply the perception of beauty, order and perfection."[482] In other words, pleasure consists of perceiving harmony, which is perfection.[483]

> "Consonances please, since agreement is easily observable in them…Agreement is sought in variety, and the more easily it is observed there, the more it pleases; and in this consists the feeling of perfection. Moreover, the perfection a thing has is greater, to the extent

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480 "Man mercket nicht allzeit, worinn die Wollkommenheit der angenehmen Dinge beruhe, oder zu was für einer Wollkommenheit sie in uns dienen: unterdessen wird es doch von unsern gemüth, obscon nicht von unsern Verstand, empfunden. Man sagt ins gemein: es ist, ich weiss nicht was, so mir an der sach gefället…" (*Von der Weissheit*) G VII, p. 86; L, p. 425.

481 See *La Félicité*, Gr, p. 271, in which Leibniz mentioned music and symmetry as pleasures of the senses that most closely approach the pleasures of the mind. He also warned that these pleasures should not be used too often. However, in *De rerum originatione radicali* he argued that harmony may profit from some dissonance that spices up the whole: "…scilicet componendi artifices dissonantias saepissime consonantiis miscent ut excitetur auditor et quasi pungatur, et veluti anxius de eventu, mox omnibus in ordinem restitutis…" G VII, p. 306. He approved of opera, which he thought had its origins in Church music. He considered it a powerful instrument that could be used to govern the passions and incite feelings of honour, virtue and natural piety in common man. Aiton, *Leibniz, A Biography*, p. 121. He also studied acoustics. For some texts on acoustics, see Ger, p. 10-37

482 "Voluptas enim intelligentis nihil aliud est quam perceptio pulchritudinis, ordinis, perfectionis." G VII, p. 290.

483 As mentioned in Chapter 2.5., opinions vary concerning the identity of harmony and perfection.

> that there is more agreement in greater variety, whether we observe it or not. Therefore, this is what order and regularity come to."[484]

One feature of pleasure is still to be noted and that is anticipation. Pleasure is necessarily backwards looking – it contains a mnemonic component. A pleasure leaves a memory trace or an echo in us and creates anticipation of future pleasures. When we have experienced a powerful feeling of pleasure in something, we desire more of the same kind, and because a true increase in perfection (in other words, promoting universal perfection) creates much greater pleasure than sensual pleasures, we are inclined to engage in the kind of actions that produce such pleasure in us.[485] Thus reasonable choices motivate subsequent choices, and the habit of doing good leads to virtue.

9. 2. Happiness and Virtue

Striving for goodness or pursuing joy may eventually lead to happiness. "…we act to attain happiness or a state of enduring joy, and joy is the sense of perfection."[486] However, Leibniz doubted the existence of a complete state of joy or happiness:

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[484] "Hinc scis placere consonantias, quia in iis consensus facile est observabilis…Consensus quaeritur in varietate, hic placet eo magis, quo facilius observatur, et in hoc consistit sensus perfectionis. Perfectio autem in re ipsa est tanto major, quanto major est consensus in majore varietate, sive a nobis observatur vel non. Huc ergo redit ordo et regularitas." GW, p. 171; AG, p. 233.

[485] See NE, I, ii, §20-24. On the metaphysical dimensions of anticipation, see Kaehler, *Leibniz' metaphysiche Begründung der Möglichkeit rationaler und ästhetischer Antizipation.*

[486] "Agimus autem ut felicitatem consequamur sive duraturae laetitiae statum. Laetitia vero est sensus perfectionis. " (*Praefatio ad libellum elementorum physicae*) A VI, 4, p. 1993; L, p. 280. In NE I, ii, §3 Leibniz also defined happiness as lasting joy. A VI, 6 p. 90; RB, p. 90. In an early dialogue, *Confessio philosophi* (1672-73), his spokeman said that happiness consists in the most harmonious state of mind and that the harmony of the mind consists in thinking about harmony and the greatest harmony of the mind or happiness consists in the concentration of universal harmony, i.e.

> "I do not know if the greatest pleasure is possible; I am inclined to believe that it can increase to infinity, for we do not know how far our knowledge and our organs can be developed in the course of the eternity that lies before us. So I would think that happiness is a lasting pleasure that cannot occur without continual progress to new pleasures….We might say, then, that happiness is a pathway through pleasures and that pleasure is only a single step to happiness..."[487]

Subjective happiness has to be continuously sustained in order to be preserved. Leibniz, like Spinoza, argued that the more active one is, the more one attains joy and the more one's feeling of perfection is increased. Contemplating God and His perfections brings about the most complete joy and activity.

Given Leibniz's love of analogy, it is easy to infer that he also considered universal happiness a process. The process of increasing perfection is never complete: the virtuous person sees it as his or her task to promote it (thus striving for moral goodness), and in the process one also gains pleasure. One's deeds contribute to one's future happiness, which may follow from God's benevolence in the hereafter. This could be achieved by striving for intellectual activity, which gives us supreme pleasure:

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of God, in the mind. Since God is an infinite being, happiness can also increase to infinity. Leibniz, *Confessio philosophi*, pp. 30-31.

[487] "Je ne say si le plus grand plaisir est possible; je croirois plus tost qu'il peut croistre à l'infini, car nous ne savons pas jusqu'où nos connoissances et nos organes peuvent estre portés dans toute cette eternité qui nous attend. Je croirois donc que le bonheur est un plaisir durable, ce qui ne sauroit avoir lieu sans une progression continuelle à de nouveaux plaisirs….Le bonheur est donc (pour ainsi dire) un chemin par des plaisirs; et le plaisir n'est qu'un pas et un avancement vers le bonheur…" (*Nouveaux essais* II, xxi, §42) A VI, 6, p. 194, RB, p. 194. For a discussion of medieval mystical treatises by Clement of Alexandria on the process of perfection, see Knuuttila, *Emotions in Ancient and Medieval Philosophy*, p. 120, for a discussion of the matter by Cappadocian fathers, pp. 127-36, of Aquinas' theory of pleasure and enjoyment, pp. 252-53, of the views on pleasure and enjoyment of the voluntarists, p. 269f, and of Adam Wodeheim's distinction between temporal and infinite fear and suffering, p. 281.

> "All pleasure is a feeling of some perfection; one loves an object in proportion to the sense of perfection it evokes; nothing surpasses divine perfection. Whence it follows that charity and the love of God give the greatest pleasure that can be conceived, in proportion to the extent to which one is penetrated by these feelings, which are not common among men, busied and taken up as they are with the objects that concern their passions."[488]

Moral goodness or virtue arises from the knowledge and love of God, for it makes us take pleasure in willing as He wills. In other words, we should imitate God (who is perfection itself) in all our actions, since the harmony, goodness and beauty of the world reflect His qualities.

> "One must hold as certain that the more a mind desires to know order, reason, and the beauty of things that God has produced, and the more he is moved to imitate this order in the things God has left to his direction, the happier he will be."[489]

As mentioned, Leibniz distinguished real from apparent good; he held that judgement concerned apparent good while correct reasoning concerned real good: something is apparent good if it is believed to produce pleasure, and real good, if it, in fact, does produce pleasure.[490] Apparent good will satisfy only temporary needs, while real good produces more lasting pleasure. One should strive for real good and greater pleasures, which are to be found, again, in meditating about the creator and supreme being, God.

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[488] "Tout plaisir est un sentiment de quelque perfection: l'on aime un objet, à mesure qu'on en sent les perfections: rien ne surpasse les perfections Divines: d'où il suit que la charité et l'amour de Dieu donnent le plus grand plaisir qui se puisse concevoir, à mesure qu'on est penetré de ces sentimens, qui ne sont pas ordinaires aux hommes, parce qu'ils sont occupés et remplis des objets qui se rapportent à leur passions." (*Essais de Theodicée*, §278) G VI, p. 282; H, p. 297.

[489] "Il faut tenir pour asseuré que plus un esprit desire de connoistre l'ordre, a raison, la beauté des choses que Dieu a produites, et plus il est porté à imiter cet ordre dans les choses que Dieu a abandonnées à sa conduite, plus il sera heureux." Gr, p. 581; Leibniz, *Political Writings*, p. 84.

[490] See NE, II, xxi, §31f.

> "One need not shun at all pleasures that are born of intelligence or of reason, as one penetrates the reason of the reason of perfections, in other words to say as one sees them flow from their source, which is the absolutely perfect Being…But one cannot love God without knowing his perfections, or his beauty. And since we can know Him only in His emanations, these are two means of seeing his beauty, namely in the knowledge of eternal truths (which explain [their own] reasons in themselves), and in the knowledge of the harmony of the universe (in applying reasons to facts). That is to say, one must know the marvels of reason and the marvels of nature."[491]

For this purpose Leibniz conceived of various methods of increasing knowledge – which included his *scientia generalis*, *characteristica universalis*, his plans for a universal encyclopaedia and different probability and "soft" heuristic methods (such as dialectics, hermeneutics and decision models). Living virtuously gives us supreme pleasure and happiness, and leads us to wisdom.[492]

Leibniz discussed wisdom in a short memoir called *Von der Weisheit*. He began by suggesting that it is merely the science of happiness, or the science that teaches us to achieve the permanent state of joy that is happiness. Happiness, again, is acquired by feeling the increase in perfection, which also creates a sense of

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[491] "On ne doit point se defier des plaisirs qui naissent de l'intelligence ou des raisons, lorsqu'on penetre la raison de la raison des perfections, c'est à dire lors qu'on les voit decouler de leur source qui est l'estre absolument parfait…Mais on ne scauroit aimer Dieu sans connoistre ses perfections ou sa beauté. Et comme nous ne le scaurions connoistre que dans ses emanations, il y a deux moyens de voir sa beauté, scavoir dans la connoissance des verités eternelles <expliquant les raisons, en elles mêmes>, et dans la connoissance de l'Harmonie de l'Univers en appliquant les raisons aux faits. C'est à dire il vaut connoistre les merveilles de la raison [ou de l'esprit] et les merveilles de la nature." Gr, pp. 580-81; Leibniz, *Political Writings*, pp. 83-84.

[492] "Pour contribuer veritablement au bonheur des hommes, il faut leur éclairer l'entendement, il faut fortifier leur volonté dans l'exercise des vertus, c'est à dire dans l'habitude d'agir suivant la raison; et il faut tacher enfin d'oster les obstacles, qui les empechent de trouver la verité et de suivre les veritables biens." (*Memoire pour des personnes eclairees et de bonne intention*). A IV, 4, p. 615; Leibniz, *Political Writings*, p. 105.

harmony or perfection in the one who perceives it. Perfection elevates the person to a higher state and makes him or her more free than he or she would otherwise be:

> "…perfection shows itself in great freedom and power of action, since all being consists in a kind of power; and the greater the power, the higher and freer the being."[493]

He sums up his discussion by stating that happiness, pleasure, love, perfection, being, power, freedom, harmony, order and beauty are all tied to each other.[494] Achieving wisdom means understanding the connections between these notions and the source from which they flow. Studying nature gives us knowledge of God's perfections and reveals to us the principles of ethics, which in turn increase our love towards Him.[495] By developing our understanding of the world we can gain happiness.[496]

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[493] "…die Vollkommenheit in einer grossen freiheit und krafft zu würden. Wie dann alles wesen in einer gewissen krafft bestehet, und je grösser die krafft, je höher und freier das wesen." G VII, p. 87, L, p. 426. Another passage on the same topic occurs in *Bien raisonner est en nostre pouvoir*: "Nous sommes libres, entant que nous raisonnons juste; et esclaves autant que nous sommes maistrisés par les passions qui viennent des impressions interieures." A VI, 4, p. 1640. Michael Murray argues that Leibniz supported a relatively unknown doctrine called moral necessetarianism, which was a mediating view between intellectualism (which held that the will followed the judgement) and voluntarism (the will is absolutely free). According to this view, the will follows the strongest inclination arising from a combination of conscious deliberation, unconscious perceptions and passions. Of course, God and the angels cannot have unconscious perceptions and passions. Moral necessetarianism was put forward by Diego Ruiz de Montoya and Diego Granado at the beginning of the 17th century. See Murray, *Intellect, Will and Freedom*, p. 43f and Murray, *Pre-Leibnizian Moral Necessity*. On moral necessetarianism, see also Knebel, *Wille, Würfel und Wahrscheinlichkeit*. As I will show later, I believe Leibniz thought that in complicated situations different inclinations were not to be summed, but multiplied. Thus the goal was an optimum, not a sum of inclinations.

[494] G VII, p. 87.

[495] In *Specimen Demonstrationum Politicarum* from 1669 Leibniz noted that deliberations concerning altruistic goals cannot be guided by prudence,

It seems that this is not possible for everybody, and no one can rise more easily to a higher state of happiness than persons of rank, who have the possibility to study and to do research. In fact, he who consorts much with excellent people or things becomes more excellent himself.[497] This, of course, has to do with representation. The glorification of a person of rank or a prince is for the good of all:

> "When a person of rank attains this and finds his joy in the actions of his understanding and his virtue, even in the midst of all abundance and honour, I consider him doubly exalted. He is exalted unto himself because of this, his happiness and true joy; he is exalted before others because it is entirely certain that such a person can and will share his light and virtue with many others because of his power and reputation, since such sharing will reflect glory upon himself and so give new light to all those who have the same common purpose of helping each other in the search for truth, the knowledge of nature, the multiplication of human powers, and the advancement of the common good."[498]

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which is the science of the good and that we need a science of the optimum, that is, wisdom related to perfection. Later he used the term wisdom exclusively. See prop. XXXVIII and Piro, *Leibniz and Ethics: the Years 1669-72*, p. 160.

[496] "…nichts mehr zur glückseeligkeit diene, als die erleuchtung des Verstandes, und übung des Willens allzeit nach dem verstande zu würden, und dass solche erleuchtung sonderlich in erkentniss derer Dinge zu suchen, die unsern verstand immer weiter zu einem höhern liecht bringen können…" G VII, p. 88.

[497] G VII, p. 88.

[498] "Wenn nun eine hohe Person solches erlanget, also dass sie auch mitten in allem überfluss und Ehren dennoch ihre grosse vergnügung findet in den Würchungen ihres verstands und ihrer Tugend, die halte ich doppelt für hoch: vor sich, wegen diesser ihrer glückseeligkeit und wahren Freude; für andere aber, weil ganz gewiss dass diese Person wegen ihrer macht und ansehens kan und wird auch vielen andern liecht und Tugend mittheilen, indem solche mittheilung eine rückstrahlung aufs sie selbst machet, und die so dergleichen gemeinsamen zweck haben, in untersuchung der Wahrheit, erkentniss der Natur, vermehrung

It is thus important that princes should understand their source of happiness and promote the progress of universal perfection. Thus, disagreeing with Hobbes, Leibniz argued in many of his political writings that princes should guarantee not only the security of their subjects, but also their happiness.[499] Although in this respect he was ahead of his time, his political views were conservative on the whole, as can be seen in his letter to Burnett (1701):

> "The end of political science with regard to the doctrine of forms of commonwealths must be to make the empire of reason flourish. The end of monarchy is to make a hero of eminent wisdom and virtue reign…The end of aristocracy is to give government to the most wise and the most expert. The end of democracy, or polity, is to make the people themselves agree to what is good for them. And if one could have all three at once: a great hero, very wise senators, and very reasonable citizens, that would constitute a mixture of the three forms."[500]

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menschlicher krafft und beförderung ihres gemeinen besten einander helfen und neues liecht geben können." G VII, p. 89, L, p. 427.

[499] For example, he suggested establishing a fund for helping people who had been unlucky in their commercial ventures, such as in the shipping business. See K VI, p. 236. In the memoir *Grundriss eines Bedenckens von Aufrichtung einer Societät in Deutschland* he suggested many different projects for the common good and social well-being. See A, IV, 1, p. 530f. Patrick Riley has argued that he anticipated Bismarck's ideas of a welfare-state. See Leibniz, *Political Writings*, p. 25, note. One can find similar remarks in Spinoza's *Ethics*, Part IV, appendix, XVII, where he argued that since the resources of an individual man are too limited to make all men his friends, the duty of the state is to provide aid for the poor. I am grateful for Professor Simo Knuuttila of this observation.

[500] "Le but de la science politique à l'egard de la doctrine des Formes des Republiques, doit estre de faire fleurir l'Empire de la raison. Le but de la Monarchie est de faire regner un heros d'une eminente sagesse et vertu…Le but de l'Aristocratie est de donner le gouvernement aux plus sages at aux plus experts. Le but de la democratie, ou politie, est de faire convenir les peuples mêmes de ce qui est de leur bien. Et s'il y avoit tout à la fois: un grand Heros, des Senateurs tres sages, et des citoyens tres raisonnables, cela feroit le meslange des trois formes." G III, p. 277; Riley, *Leibniz' Universal Jurisprudence*, pp. 214-215.

This is a reflection of God's love towards his creation, and by imitating it princes can promote love in the world. Love, again, brings happiness. If princes were to make informed, in other words rational, decisions, everybody would profit from them. Understood in this manner, wisdom is essentially knowledge of one's own good.[501]

Of course, this view requires that the pleasure we get from increasing perfection is motivating enough for us to follow it. The goal that the real good in question represents may not be in sight, or may be represented only by symbols. This is why Leibniz promoted education on different levels, and argued that one must work for posterity.[502] A great number of virtuous princes – virtue defined as living according to wisdom – promoted the general process of perfection so greatly that the same progress would otherwise have taken many hundreds of years.[503]

Despite his high ideals and optimism about enlightenment, in his practical memoirs Leibniz was well aware that pleasure of the mind was often not sufficient to motivate men. In order to eliminate the "happy sinner" he postulated that God as the King of the Kingdom of Grace maintained harmony. If this harmony was broken, punishment must be given by way of atonement. The idea of an immortal soul and of a just God who rewards and punishes should alone prevent men from doing evil. Given the immortality of the soul, the punishment of the sinner would take place at some point of its history, which may not be during the natural lifetime of the agent. [504]

> "…it is repugnant to say that only the law or constraint make a man just; although it must be conceded that those who have not reached this point of spiritual perfection are only susceptible to obligation by hope or fear; and that the prospect of divine vengeance, which one cannot escape even by death, can better than anything else make

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[501] Brown, *Leibniz's Moral Philosophy*, pp. 415-16.
[502] (*Memoire pour des personnes eclairees et de bonne intention*), A IV, 4, p. 621.
[503] G VII, p. 89.
[504] On this theme, see Rutherford, *Leibniz and the Rational Order of Nature*, p. 59f. See also the introduction in *Leibniz. Nature and Freedom*, pp. 12-13.

apparent to them the absolute and universal necessity to respect law and justice."[505]

10. Deliberation

10. 1. Some Major Influences on Leibniz's Views

Leibniz's theory of deliberation is an original combination of old and new ideas. The framework is the Aristotelian tradition, and especially the intellectualism of Thomas Aquinas, but Leibniz's pluralism, his dynamic world-view and his ethical consequentialism complicate the picture.

According to Aristotle, deliberation entails the application of a practical syllogism, for example, of which the first premise concerns the desirable end (person *a* wants state of things *p* to take place), the second premise concerns the necessary action to bring about the desired end (*a* believes that *p* will not take place unless he or she does *q*), and the conclusion is that the suggested action starts.[506]

Deliberation may also take the form of an eliminative model, which Aristotle describes in Book II, Chapter 9 of *Nicomachean Ethics*. Since it is often difficult to find a mediating course between excess and defiency, one should first avoid the one that is farthest away from the mean. If one cannot find the mediating course, one should choose the second-best alternative, which is the least evil option.[507] If we cannot identify the right course, we should estimate which one will produce the least damage to the promotion of *eudaimonia*.

Once the deliberation concerning the best means of promoting the end is complete and the recommendation for action offered by practical reason has been chosen (*prohairesis*), the action follows immediately, provided there is no hindrance. There is no place for freedom of deliberation between different means once the choice has been made. If the action in rational deliberation does not start

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[505] Ibid., pp. 72-73.
[506] See *Nicomachean Ethics* III, ch. 3.
[507] *Nicomachean Ethics* III, ch. 9, 1109a30-35.

once the judgement is completed, and there is no external hindrance, the reason for the "malfunction" is to be sought in the irrational soul.

The other main trends in moral philosophy in Leibniz's time were stoicism (in the form of neo-stoicism, represented by Du Vair, for example) and the natural-law tradition, represented by Grotius, Hobbes, Pufendorf and Barbeyrac, among others.

The Stoics' views of emotions and deliberation were clearly different from the views of the proponents of the Aristotelian tradition. According to the Stoics, by following nature and cultivating reason a Stoic could attain virtue, which consists of knowledge. One could either have virtue (which meant to live in agreement with nature) or not. They argued that moral choices were determined by reason - thus men should get rid of disturbing elements that might interfere with the exercise of reason, and similarly suppress all false beliefs. In the process of deliberation the agent either gives assent to an impression or withholds it, in other words, agent gives in or resists the temptation.[508] The goal is to reach a state of peace of mind (*ataraksia*) and good feeling (*eupatheiai*), in which no irrational elements are present.[509]

Leibniz agreed with the Stoics in that one could achieve virtue by understanding the world order and willing as God wills. In many respects, however, he was critical of Stoicism, which he thought required the adaptation of the new ideas of the early modern period. He thought that restricting happiness to mere *ataraksia* abolished hope of increasing one's own happiness: it was forced happiness, or "patience without hope."[510] Arguing against

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[508] Bobzien, *Determinism and Freedom in Stoic Philosophy*, p. 240.

[509] For a discussion of the Stoic theory of emotions, see Knuuttila, *Emotions in Ancient and Medieval Philosophy*, pp. 47-71.

[510] "Il est vray que les enseignemens de Stoïciens (et peutestre aussi de quelques Philosophes celebres de nostre temps) se bornans à cette necessité pretendue, ne peuvent donner qu'une Patience forcée; au lieu que Nostre Seigneur inspire des pensées plus sublimes, et nous apprend même le moyen d'avoir du contentement, lorqu'il nous asseure que Dieu, parfaitement bon et sage, ayant soin de tout, jusqu'à ne point negliger un cheveu de nostre tête, nostre confiance en luy doit estre entiere…" (*Essais*

the Stoics, Leibniz postulated that we are able to anticipate God's will and strive to act in ways that pleased Him. At the same time, we could also increase our happiness. He did not consider hope a disturbing passion, as the Stoics did (in the sense that it meant discontent with the present world order), but rather saw it as a motivation to act for the general good.[511]

Being a lawyer, Leibniz was also aware of the discussion concerning natural law. He consistently agreed with "the incomparable" Hugo Grotius and criticised voluntarists such as Descartes and Thomas Hobbes on major matters of justice, sovereignty and political rule.[512] His main contemporary opponent was Pufendorf, whom he considered to be "an inferior German version of Hobbes."[513] Leibniz's main argument against Pufendorf was the same as his arguments against Descartes and Hobbes, that justice was not decided by God as a sovereign. It was based on eternal truths and the nature of things, as he argued in his *Opinion on the Principles of Pufendorf (Epistola viri excellentissimi ad amicum qua monita quaedam ad principia Pufendorfiani operis de officio hominis et civis continentur,* 1706*)*:

> "Neither the norm of conduct itself, nor the essence of the just, depends on his free decision, but rather on eternal truths, objects of the divine intellect which constitute, so to speak, the essence of divinity itself."[514]

It was not only with the source of law, but also with Pufendorf's concept of obligation that Leibniz disagreed. He did not think that morality and deliberation should be related to something

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de Theodicée, preface). G VI, p. 30. On Leibniz's views on Stoicism, see Rutherford, *Patience sans Espérance: Leibniz's Critique of Stoicism*.

511 Rutherford, *Patience sans Espérance: Leibniz's Critique of Stoicism*, pp. 67-71.

512 For an extensive discussion of Leibniz's political views, see Riley, *Leibniz' Universal Jurisprudence*.

513 See Leibniz, *Political Writings*, p. 28.

514 "Neque ipsa norma actionum aut natura justi, a libero ejus decreto, sed ab aeternis veritatibus divino intellectui objectis pendet; quae ipsa, ut sic dicam, divina effentia constituuntur." Dut. IV, p. 280; Leibniz, *Political Writings*, p. 71.

temporary, such as a law or a superior with the power to punish, since any obligation to a ruler or state would cease when the superior died or the state collapsed.[515] Thus one should build on rational, universal goodness, which could be found independently of the will of God. Men could imitate God in their actions, since God in His infinite understanding knows what is good and follows it. If God were to make moral laws, men could not tell whether they were good or bad. Furthermore, the claim that God is just would have no basis, since if there was nothing superior to Him, He could do whatever He pleased.

Leibniz's critique (*Monita* for short, originally a letter to Molanus at his request) became famous when Barbeyrac added most of it to the fourth French edition of Pufendorf's *De officio hominis et civis*, which appeared in 1718 after Leibniz's death. Barbeyrac included his own comments, published anonymously, which competently defend Pufendorf's views. He pointed out that Leibniz's criticism missed the mark because Pufendorf distinguished between internal and external obligation, the former is being based on moral bond and thus complementing external obligation, which was based on command alone. However, Barbeyrac had difficulties in defending Pufendorf's stand against Leibniz's argument concerning the circularity of the idea of God as both a judge and a lawmaker. Pufendorf apparently thought that while God had just reasons for his power, his will was also the source of justice and ethics.[516]

Several other influences on Leibniz's views on deliberation should also be mentioned. One of these was Hobbes despite Leibniz's general criticism of his thinking. Hobbes' psychological theory seemed to be very materialistic. In the sixth Chapter of the first book of *Leviathan*, for example, he pointed out that the mind is composed of motions of the body or bodies, and thus his

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[515] For a discussion of Leibniz's critique of Pufendorf, see Saastamoinen, *The Morality of the Fallen Man.*

[516] Commentators disagree about whether Brabeyrac succeeded in this task or not, and whether he gave up some of Pufendorf's ideas. See Korkman, *Voluntarism and Moral Obligation – Barbeyrac's Defence of Pufendorf Revisited.*

conception of the mind in a state of nature was non-rationalist. He claimed that impulses from outside (perceptions) caused motions, which he called endeavours. "This endeavour, when it is toward something which causes it, is called appetite, or desire…and when the endeavour is fromward something, it is generally called aversion."[517]

Deliberation, then, is "the whole summe of desires, aversions, hopes and fears, continued till the thing be either done, or thought impossible."[518] The choice is the last step in the process – the decision ends it. There is no independent will: "In deliberation, the last appetite, or aversion, immediately adhaering to the action, or to the omission thereof, is that we call the will; the act (not the faculty) of willing…"[519]

During the process of deliberation the agent waits until a strong enough desire or aversion comes to put an end to it, thereby leading to action. These outer impulses affect our body in different magnitudes, and may also affect each other or exclude each other. In a complex situation we feel desires or inclinations and aversions alternately.

In Hobbes' view the conflict between desires and aversions formed the background to deliberation and the outcome of this conflict was either the last "straw" that led to action, or to a situation in which no strong enough desire was present and consequently no action followed.[520] This last "straw" was either a desire or an aversion.[521] If it was a desire, it was called will, if an aversion, it was called unwillingness.[522]

> "…deliberation is nothing else but a weighing, as it were on scales, the conveniences and inconveniences of the fact we are attempting; where

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[517] Hobbes, *Leviathan*, p. 38. See also Hobbes, *Human nature and De Corpore politico*, pp. 43-44.
[518] Hobbes, *Leviathan*, p. 44.
[519] Ibid., p. 44.
[520] Schneewind, *The Invention of Autonomy*, p. 88.
[521] Hobbes, *Human nature and De Corpore politico*, p. 71.
[522] See *De Corpore* xxv, 13. in Hobbes, *Human nature and De Corpore politico*, p. 227.

> that which is more weighty, doth necessarily according to its inclination prevail with us."[523]

A desire that is strong enough leads to action unless there is a hindrance. The desires in question are essentially random – the process of deliberation is not rational in the sense of choosing between options judged good by the intellect.[524] In this respect, Leibniz clearly differed from Hobbes in his views on deliberation, but as I will show, there were also similarities in more simple cases.

One other major influence on Leibniz's views on deliberation is still to be mentioned, namely that of Spinoza, who held that there was only one substance that was infinite and indivisible, God/nature.[525] This one substance has attributes, of which Spinoza primarily mentioned two, extension and thought. Each of these could be conceived of either as a modification of thought or as a modification of extension.[526] The human mind is a part or a modification of the infinite intellect of God. The corresponding object to the human mind is the body, which is a certain modification of God's attribute of extension.[527] For this reason the mind and the body are the same unity, which could be conceived of either within the attribute of thought or within the attribute of extension.[528] There are various interpretations of how the mind-body relation is to be understood, but it is clear that Spinoza thought that they did not interact directly with each other.

The emotions, or affects as Spinoza called them, are our ideas of the way in which other things affect us.[529] The "perceptions" of the deliberator are interpretations of whether some object is good or bad for our power or self-preservation. When our power increases and we become more active we feel joy (pleasure), and when it decreases and we become passive we feel sadness (pain). The

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[523] *De Cive*, II, xiii, 16.
[524] Paden, *Hobbesian Deliberators*, p. 37.
[525] Spinoza, *Ethics* I, prop. 14.
[526] Ibid., II, prop. 7, schol.
[527] Ibid., II, prop. 13.
[528] Ibid., II, prop. 7, note.
[529] James, *Actions and Passions*, pp. 145-46.

passions are confused ideas that cause suffering to the mind, and in turn produce sadness and inactivity.

According to Spinoza, the passions have less power upon us when we have a reasonable number of adequate ideas.[530] As mentioned, moving from inadequate to adequate ideas increases our power and consequently our joy, and therefore we should increase our knowledge of God or nature. Eventually we could attain wisdom, which is intuitive knowledge of God or nature. Having intuitive knowledge means seeing in one mental vision the necessary connection between or among some number of propositions, and enjoying the highest contentment of the mind.[531] When we are no longer driven by passions and act from clearly understood reasons, we may attain freedom.[532]

10. 2. Leibniz's Views on Deliberation

Leibniz adopted different elements from all of these theories into his own views of deliberation. As far as I know, he never wrote a systematic account, however. What remains are only some scattered remarks on how decisions should be made, mostly in connection with practical cases. Fortunately there are also some specific passages on the subject in his later works, such as *Nouveaux essais* and *Essais de Theodicée*, which were of help in the following reconstruction.

Deliberation has only recently become an object of attention in Leibniz scholarship, and this is why my presentation refers mostly to studies on specified limited topics.[533] In what follows I attempt to combine these different interpretations with my own reflections to produce a consistent account of Leibniz's views on deliberation, and I argue that there are two kinds of cases of deliberation that require two different models of decision. While there have been some studies on the different ways in which Leibniz thought good

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[530] Spinoza, *Ethics* III, Def. II.
[531] Ibid., V, prop. 32, demonstration.
[532] Ibid., IV, props. 66-73
[533] *Leibniz. Nature and Freedom* (ed. Rutherford & Cover) is an example of an important recent study on the topic.

decisions should be made, the distinction between two kinds of cases has not, as far as I know, been made previously. I also provide a host of examples that illustrate these different kinds of deliberation.

There is a common general feature in many of Leibniz's remarks on deliberation, as Marcelo Dascal argued in his article "The Balance of Reason." This is the metaphor of weighing reasons, already familiar from Hobbes:

> "It is often said, with justice, that reasons should not be counted, but weighed; however, no one has yet given us the balance that should serve to weigh their force."[534]

This metaphor was traditionally applied in describing legal proceedings, and Leibniz used it in many connections, such as in his memoirs *Commentatiuncula de judice controversiarum seu Trutinâ Rationis et normâ Textus* and *Ad stateram juris de gradibus et probabilitatum* (1676). In the former he argued that the balance of reason is the engine that activates and controls all beliefs, preferences, decisions and actions,[535] while the latter memoir, written under a pseudonym Gottfried the Truthful of Lublin (*Godefridi Veranii Lublinensis*), was his boldest statement on the matter. It starts on a note of self-confidence:

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[534] "…on dit souvent avec justice que les raisons ne doivent pas estre comptée, mais pesées; cependant personne ne nous a donné encor cette balance qui doit servir à peser la force des raisons." (A letter to Burnett) G III, p. 194. In what follows, Leibniz lamented the lack of a theory of probability and says that, God willing, he would devote himself to it full-time. See also Leibniz's letter to Gabriel Wagner on the value of logic: "Denn man insgemein gar wohl sagt, rationes non esse numerandas sed ponderandas..." G VII, p. 521.

[535] "Perinde ac si daretur Trutina quaedam rationum in qua utrinque momenta causeae exposita accuratè expederentur, et quo inclinaret examen, pro illâ parte pronunciaretur. Qvam Trutinam fabricare quisquis homines docuerit, is profectò majorem eis artem tradiderit fabulosa illa scientia aurificandi." (*Commentatiuncula de judice controversiarum seu Trutinâ Rationis et normâ Textus,* §60), A VI, 1, p. 556.

> "I present here a certain balance of the law, a new kind of instrument with which it is possible to estimate the value, not of precious metals and stones, but of something more precious than that: the weights of reasons."[536]

He emphasises the key role of jurists in applying the method:

> "…just as mathematicians have excelled above other mortals in the practice of logic, i.e. the art of reason, of the necessary, so did the jurists in the logic of the contingent."[537]

Although jurisprudence is the model science of weighing reasons, it can be applied to deliberation in general:

> "Hence, the example set by the jurists of the use of human reason should be followed in the extremely serious deliberations about life and health, about the state, about war and peace, about the management of consciousness, and about taking care of eternity."[538]

The balancing of reasons is a method of deliberating between different estimations of the consequences for both the general good of the proposed actions and the goodness of the actions themselves, in other words the probability of choosing the morally right option.[539] If we could have some knowledge of the goodness

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536 "Stateram quandam juris affero, novum instrumenti genus, quo non metalla et gemmeae, sed quod illis pretiosius est rationum momenta aestimari possint." O, p. 211; Leibniz, *The Art of Controversies*, p. 36.

537 "...ut Mathematicos in necessariis, sic Jurisconsultos in contingentibus Logicam, hoc est rationis artem, prae caeteris mortalibus optime exercuisse." O, p. 211; Leibniz, *The Art of Controversies*, p. 36.

538"Itaque a Jurisconsultis exemplum petere oportet instruendae rationis humanae in gravissimis de vita <et sanitate>, de republica, de belli pacisque negotiis, de conscientiae moderamine, de aeternitatis cura, deliberationibus." O, pp. 212-13; Leibniz, *The Art of Controversies*, p. 38.

539 "…l'on ne s'est pas même avisé de celle qui doit regler le poids des vraisemblances, et qui seroit si necessaire dans les déliberations d'importance…les plus excellens philosophes de nostre temps, tels que les Auteurs de l'Art de penser, de la Recherche de la verité, et de l'Essai sur l'entendement, ont éte fort éloignés de nous marquer les vrais moyens propres à aider cette faculté qui nous doit faire peser les apparences du vray et faux." (*Essais de Theodicée*, §31) G VI, p. 68; H, p. 92. Here Leibniz

of proposed courses of action and their consequences for the general good, or were even able to calculate the probabilities of these in a reliable manner, we could calculate the best option directly. Difficulties in deliberation are due to the structure of the object in question – one simply cannot fully analyse infinitely complicated things such as political positions. However, as Leibniz stressed in his memoir *La place d'autruy*, we should aim at the widest possible perspective in our deliberations.

Weighing reasons is not rational in the sense that we have completely analysed all the elements present, but it may be reasonable in the sense that it is as good as it can be in the circumstances (within the limits of human cognition).[540] The goal is to find solutions that are "optimised" for the human range of possibilities, in other words, reasonable courses of action that contribute to the general progress of perfection in a manner suitable for finite intellects.

The problem with reliable balancing is partly that there are so many components present in any common deliberation that we cannot adequately take them all into consideration. We have to choose between them and to try not to be affected by prejudices, traditions, political interests, passions, limitations of attention and memory, and finally, unconscious desires.[541] These factors affect a great many human decisions. It is easy to see that both the "calibrating" of balance (shunning out external reasons) and ascertaining the reliability of the propositions in question is a very difficult or even impossible task for the limited human understanding.[542] Still, Leibniz argued that we have to examine the components or propositions as carefully as we can, and to estimate them.[543] In difficult situations it is often reasonable to choose an

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referred to Arnauld and Nicole, Malebranche and Locke. See also letter to Burnett 1. 2. 1697, G III, p. 194.

[540] Marras, *Leibniz and his metaphorical models: the "trutina rationis"*, p. 783. See also my discussion of "hard" and "soft" reason in Chapter 5.

[541] Dascal, *The Balance of Reason*, p. 4.

[542] On calibrating the balance, see Ibid.

[543] "Ut ponderum aestimanda gravitas, ita propositionum veritas; utque ponderum gravitas eadem methodo aestimatur qua gravitas rei ponderandae, ita et propositionum ad probationem adductarum veritas

option we estimate to be the least harmful to the desired goal. This kind of reasoning is connected to Aristotle's eliminative model.

In addition to these problems, there is the question of *equilibrium*. If two options are equally good or bad, which one should we choose? Leibniz denied this problem, since in his vision there was always a sufficient reason that tips the balance in one direction: there cannot be two exactly equal options.[544] This sufficient reason is to be found at least in minute perceptions that represent shades of meaning.

The most complete passage we have by Leibniz on deliberation occurs in *Nouveaux essais*:

> "To employ the art of consequences, we need an art of bringing things to mind, another of estimating probabilities and, in addition,

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eadem methodo examinanda est, qua veritas propositionis principalis in questionem deductae; ut attendendum est ne quod ponderum omittatur, aut superaddatur, ita attendedum est, ne quod rei aestimandae onus aut commodum omittatur, aut idem aliis verbis bis ponatur." (*Commentatiuncula de judice controversiarum seu Trutinâ Rationis et normâ Textus*, §65), A VI, 1 557.

[544] "Maintenant je viendray à une objection qu'on me fait icy contre la comparaison des poids d'une balance avec les motifs de la volonté. On objecte que la balance est purement passive et poussée par les poids, au lieu que les agens intelligens et doués de volonté sont actifs. A cela je reponds, que le principe du besoin d'une raison suffisante est commun aux agens et aux patiens. Ils ont besoin d'une raison suffisante de leur action, aussi bien que de leur passion. Non seulement la balance n'agit pas, quand elle est poussée egalement de part et d'autre, mais les poids egaux aussi n'agissent point, quand ils sont en equilibre, en sorte que l'un ne peut descendre, sans que l'autre monte autant." (Leibniz's fifth letter to Clarke) G VII, pp. 391-92. See also Clarke's second letter and Leibniz's replies in the Clarke-Leibniz correspondence and Vailati, *Leibniz and Clarke*, pp. 97-101. The problem of indifference or *equilibrium* (also known as the problem of Buridan's ass, although John Buridan did not discuss it in his writings) has its roots at least in Aristotle's *De Caelo* 295b32, but the subject was also discussed by Thomas Aquinas. See Zupko, *John Buridan*, p. 400, n. 71. On Leibniz's dicussion of Buridan's ass, see *Essais de Theodicée*, §49: "Et quoyque l'homme soit libre, ce que l'âne n'est pas, il ne laisse pas d'être vray par la même raison, qu'encor dans l'homme le cas d'un parfait equilibre entre deux partis est impossible…" G VI, p. 130.

> knowledge of how to evaluate goods and ills; and we need to be attentive, and, on top of all that, to have the patience to carry our calculations through. Finally, we need to be firmly and steadily resolved to act on our conclusions; and we need skills, methods, rules of thumb, and well-entrenched habits to make us true to our resolve later on, when the considerations that led us to it are no longer present in our minds."[545]

Here Leibniz distinguished five different components that are needed in deliberating well:

1) the art of bringing things to mind
2) the estimation of probability
3) knowledge of how to evaluate good and evil
4) attention and alertness
5) strength of will

We need to select the appropriate items from the memory to be able to evaluate the components in a given situation. With the help of recollection we can consider with care which components are to be noted and which are to be ignored. We should be attentive and alert enough to complete these considerations, and finally we should have strength of will, which helps us to hold on to the conclusions we have drawn.

The art of bringing things to mind, or recollection, is discussed in the preface to *Nouveaux essais*, in which Leibniz stated that although the Platonists' doctrine of recollection was a sheer myth, it was entirely consistent with unadorned reason. We cannot be aware of the whole of our memory or of our habitual ways of acting all the time. Ideas and images may persist in the memory, as

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[545]"Ainsi il nous faidroit encore l'art de s'aviser, et celui d'estimer les probabilités et de plus la connoissance de la valeur des biens et des maux, pour bien employer l'art des consequences: et il nous faudroit encore de l'attention, et de la patience aprés tout cela, pour pousser jusqu'à la conclusion. Enfin il faut un ferme et constante resolution pour executer ce qui a esté conclu; et des addresses, des methodes, des loix particulieres, et des habitudes toutes formées, pour la maintenir dans la suite, lorsque des considerations, qui l'ont fait prendre, ne sont plus presentes à l'esprit. " (*Nouveaux essais*, II, xxi, §67) A VI, 6, p. 207; RB, p. 207.

dispositions of past impressions, in both the soul and the body. We are unaware of these "traces" except when our memory has a use for them.[546] They are awoken by some circumstance, such as when hearing the opening words of a song brings to mind the rest of the words.[547] In this manner the soul is capable of attending to things within itself and reflecting on them, as discussed Chapter 4.3.3.[548]

No less important in deliberation is the estimation of the probabilities of different proposed courses of action. The agent should first estimate the goodness of some occurrence, and then assess whether the consequences of that act are adequate with respect to the general good or perfection. Thus the agent has to evaluate both the probability of the goodness of the act itself and the consequences it brings about to the desired end. There may also be several ways of bringing about the desired end, some of which may be more acceptable than others. Thus the agent should evaluate the sum-total probability of proposed courses of action and choose the one that, all things considered, is the best.[549]

It is also essential to consider the gains and losses of different parties. In *La Monadologie* Leibniz argued that God enters into the republic with spirits who are images of Himself, and that He cares for their happiness.[550] This is why it is essential in rational decisions to prefer the will of God. One should choose the option that best contributes to the good of mankind, since this choice is

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[546] "...dispositions qui sont des restes des impressions passées dans l'ame aussi bien que dans le corps, mais dont on ne s'apperçoit que lorsque la memoire en trouve quelque occasion. Et si rien ne restoit des pénsees passées aussi tost qu'on n'y pense plus, il ne seroit point possible d'expliquer comment on en peut garder le souvenir..." (*Nouveaux essais*, II, x, §2) A VI, 6, p. 140.

[547] "…souvent nous nous les remettions aisement dans l'esprit à quelque occasion legere qui nous en fait souvenir; comme il ne nous faut que le commencement d'une chanson pour nous faire ressouvenir du reste." (*Nouveaux essais*, preface) A VI, 6, p. 52.

[548] See A VI, 6, p. 79.

[549] Compare Leibniz's discussion in *Elementa juris naturalis*, discussed in Chapter 6. 2. 2. 2.

[550] See *La Monadologie*, §83-84. For a discussion on this matter, see Blumenfeld, *Perfection and Happiness in the Best of Possible Worlds*, p. 400f.

also pleasing to God. Leibniz seemed to think that if the interests of mankind were not involved, preference should be given to higher animals over lower animals, to animals over inanimate things and so on, according to the hierarchy of monads.[551]

In line with Aristotle's eliminative method, Leibniz seemed to hold that when it was very difficult to evaluate the consequences of different proposed acts it was reasonable to carry out the one that was estimated to be the least bad, since doing so might be the best way to contribute to general perfection. The hierarchy of monads was likely to be the guiding principle in evaluating different options. For example, act *A* may be better with respect to universal perfection, although it produces very little perfection, because it saves more living things than act *B*, which is more efficient with respect to perfection.

10. 2. 1. The Deliberation in the Soul

I discussed cognition in general in Chapter 4. Before moving on to the question of how different perceptions affect the soul in deliberation I will reiterate Leibniz's views on the mind and body.

Through pre-established harmony, created and maintained by God, we have a double structure of the mind and body that functions in a parallel mode. The rational or human spirit consists of an aggregate of monads, the dominating one being the self-reflexive "commander." In Leibniz's world the "ground structure" and the "top structure" (the kingdoms of nature and grace) worked in a parallel mode as defined by God through pre-established harmony. The monads differed from each other in the clearness and distinctness of their perceptions.[552]

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[551] "Les animaux, dont quelques uns sont elevés au degré des plus grands animaux par le moyen de la conception, peuvent être appellés spermatiques; mais ceux d'entre eux, qui demeurent dans leur Espèce, c'est à dire la pluspart, naissent, se multiplient, et sont détruits comme les grands animaux, et il n'y a qu'un petit nombre d'Elûs, qui passe à un plus grand theatre." (*La Monadologie,* §75). G VI, p. 620.

[552] There are certainly different interpretations of the interaction between the soul and the body in Leibniz, but I cannot go into details here. See, for example, articles in *Leibniz's New System* (ed. Woolhouse).

In a letter to Basagne dated 3 January 1696 Leibniz used the metaphor of two different clocks, which are synchronised perfectly by God.[553] Each of them is a kind of automaton that works in a parallel mode.[554] While dynamic powers affect the body, the soul is an immaterial automaton directed by appetite and perceptions. Leibniz repeatedly stated that there is nothing other than perceptions and appetitions in the monads.[555]

The monads are in constant inner motion. They reflect the outer world since they have no interaction with it, being unextended, simple mental substances. While perceptions of the monad are the raw material analysed by the intellect in the soul, the appetite, represented by the will, is the principle of change from one mental state to another.

The will represents the constant tendency to increase perfection in the world. Leibniz held that the will in the soul was a *conatus*, or striving, which aimed to produce clearer perceptions to replace the more confused ones.[556] He followed the opinions of Thomas Aquinas in his view on the relationship between the intellect and the will, and for the most part he could be seen as a follower of the intellectualist tradition. Opposing the voluntarists, he maintained that the most important element in the deliberation was the

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553 "Mettes maintenant l'ame et le corps à la place de ces deux montres; leur accord ou sympathie arrivera aussi par une de ces trois facons. La voye de l'influence est celle de Philosophie vulgaire…La voye de l'assistance est celle du systeme des causes occasionelles….Ainsi il ne rest que mon hypothese, c'est-à-dire que la voye de l'harmonie pré-établie, par un artifice divin prevenant, lequel a formé des le commencement chacune de ces substances, qu'en ne suivant que ses propres loix qu'elle a receues avec son estre, elle s'accorde pourtant avec l'autre, tout comme s'il y avoit une influence mutuelle, ou comme si Dieu y mettoit tousjours la main, au delà de son concours general." G IV, p. 498-99.

554 See Suttner, *Göttliche Maschinen*, p. 81f.

555 See, for example, a letter to De Volder, G II, p. 282 or *La Monadologie,* §17 & §19.

556 See *Nouveaux essais* II, xxi, §29f. In a letter to Remond from 1714 Leibniz wrote that appetite, which was nothing but the inclination of one perception to another, was called passion in animals and will in men. See G III, p. 622.

intellect, which judges according to current perceptions and produces recommendations for action. The will usually follows the recommendations of the intellect.

Leibniz saw no need for a separate and independent will that decided between alternatives, as claimed in the voluntarist tradition represented by Duns Scotus and William Ockham, for example. In this respect he supported the views of Hobbes and Spinoza: for "The will is a striving which follows our opinions of apparent good or evil," as he stated in *De Affectibus*.[557]

If we considere the relationship between the intellect and the will in Leibniz, we might end up with a summary similar to the one provided by Jack D. Davidson:[558]

1) Human persons are created with a natural drive for personal well-being, or *eudaemonia*
2) The parts of human persons are ordered so that their operations contribute to their natural inclination towards *eudaemonia*
3) The function of reason is to discern the relative goodness of states of affairs and of the options available to the person
4) The function of will as rational appetite instills a natural hunger for what is perceived as best by the intellect

Although Leibniz did not give the will as central a role in deliberation as Descartes did, he did not consider it insignificant. It manifests itself in the tendency of the monad to move towards a clearer perception. Every perception, even the most distinct, brings about new perceptions because it always includes a confused

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[557] "Voluntas est conatus qui sequitur opionem boni vel mali praesentem in conante." *De Affectibus*, Gr, p. 513. See also a memoir *De libertate a necessitate in eligendo*, where Leibniz stated: "Certum est infallible esse, ut Mens se determinet ad maximum bonum apparens." A VI, 4, p. 1450. In a fragment *De libertate et gratia*, written approximately at the same time he stated: "Mens eligit non per rationes necessitatis, sed per rationes veras vel apparentes bonitatis, quibus inclinatur." A VI, 4, p. 1456. On different definitions of the will in Leibniz's writings, see Heinekamp, *Das Problem des Gutens bei Leibniz*, p. 210f.

[558] Davidson, *Leibniz on the Labyrinth of Freedom: Two Early Texts*, p. 26.

element, and thus creates the need or anticipation of even more distinct perception.[559] This preference for clear perception over less clear perception is fuelled by attention, which draws the intellect towards the "better" perception that has less confused elements or prefers the kind of perceptions which correspond with our innate ideas. The will has the power to command attention, as explained shortly.

All of these mental operations in the soul happen more or less automatically, but it often happens that inclinations consisting of confused perceptions may draw attention to themselves and in this way affect the deliberation. These inclinations or passions, which include vivid odours, colours and the like, are dispositions, and not the goods or the sufferings:

> "Various perceptions and inclinations combine to produce a complete volition: it is the result of the conflict amongst them. There are some, imperceptible in themselves, which add up to a disquiet that impels us without our seeing why. There are several that join forces to carry us towards or away from some object, in which case there is desire or fear, also accompanied by a disquiet but not always one amounting to pleasure or displeasure."[560]

Cognition is always composed of different-level perceptions. Unconscious minute perceptions (appetitions) must be distin-

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[559] Jalabert, *La psychologie de Leibniz*, p. 462.

[560] "Plusieurs perceptions et inclinations concourent à la volition parfaite qui est le resultat de leur conflit. Il y en a d'imperceptibles à part, dont l'amas fait une inquietude, qui nous pousse sans qu'on en voye le sujet; il y en a plusieurs jointes ensambles qui portent à quelque objet ou qui en eloignent, et alors c'est desir ou crainte, accompagné aussi d'une inquietude, mais qui ne va pas tousjours jusqu'au plaisir ou deplaisir." (*Nouveaux essais* II, xxi, §39) A VI, 6, p. 192; RB, p. 192. Compare also NE II, xxi, §47, where the influence of Hobbes is even more evident: "Mais lors que le desir est assez fort en luy meme pour émouvoir, si rien ne l'empechoit, il peut estre arresté par des inclinations contraires, soit qu'elles consistent dans un simple panchant, qui est comme l'element ou commencement du desir, soit qu'elles aillent jusqu'au desir même." A VI, 6, p. 195.

guished from higher-level perceptions (volitions), which may be apperceived since they consist of apperceived ideas.

> "There are other efforts, arising from insensible perceptions, which we do not apperceive; I prefer to call these 'appetitions' rather than volitions, for one describes as 'voluntary' only actions one can apperceive and can reflect upon when they arise from some consideration of good and bad; though there are also appetitions that can be apperceived."[561]

While in the lower monads the appetitions affect the action more or less mechanically, the spirits can choose, in the manner described above, which elements are noted and which are ignored. The deliberation is often between inclinations consisting predominantly of clear and distinct ideas (representing real good) and those consisting predominantly of vivacious ideas (comprising confused, minute perceptions and representing apparent good). A special case of the latter is the perception of perfection, which corresponds with our moral instinct through our imagination.

As mentioned, Leibniz seemed to think that few persons were able to act consistently according to clear and distinct ideas, although it is clear that in practical rationality conscious volitions are considered much more important than appetitions.

Put in another way, in deliberation there are different inclinations and it is the conflict between them that forms the complete volition. Usually there are both conscious volitions and unconscious appetitions. These inclinations may be united if they lead in the same direction, but if they are of equal strength but lead in opposite directions they are mutually exclusive. If they lead in different directions, the strongest ones are victorious.

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[561] "Il y a encore des efforts qui resultent des perceptions insensibles, dont on ne s'apperçoit pas, que j'aime mieux appeller appetitions que volitions (quoyqu'il ait aussi des appetitions apperceptibles), car on n'appelle actions volontaires que celles dont on peut s'apercevoir, et sur les quelles nostre reflexion peut tomber lors qu'elles suivent de la consideration du bien et du mal." (*Nouveaux essais* II, xxi, §5) A VI, 6, p. 173; RB, p. 173. In the last sentence Leibniz was probably referring to the perception of perfection, which is clear but confused.

In a straightforward situation inclinations towards the good clearly favour some course of action, and in this case the deliberation is easy. Often, however, there are so many inclinations towards different courses of action that some conflict between them is inevitable. This "collision" produces new inclinations, which are "compromises". The eventual result of all this is the prevailing effort that comprises full volition.[562]

The behaviour of these impulses is comparable to the beginnings of motion, or *conatuses*, as Leibniz described them in his early mechanical work *Theoria motus abstracti*. He stated that every body in collision transfers to the other a *conatus* equal to its own without thereby losing any of its original *conatus* (TMA, §10, G IV, p. 229). The multiple *conatuses* last only for a moment (except in people's minds) before they are resolved into one (TMA, §17, G IV, p. 230). If they are unequal, the resultant *conatus* will retain the direction of the greatest one, and have for its magnitude the difference between the original *conatuses*.[563] If the *conatuses* are equal, they rule each other out and another takes their place. Later Leibniz gave up this mechanism and replaced it with his dynamics which consists of four different kind of forces. The basic setting, however, remained the same.[564]

In an early dialogue, *Confessio philosophi*, from around the same time (1672-73) Leibniz directly linked *conatuses* with affects of the mind:

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[562] *Nouveaux essais* II, xxi, §39, A VI, 6, p. 192.

[563] TMA, §18-20, G IV, pp. 230-31. See also Garber, *Motion and Metaphysics in the Young Leibniz*, p. 169.

[564] Here is a very short summary of Leibniz's mature cosmology: on the metaphysical level, we have a pre-established harmony, in which substances are windowless. The "spiritual" development of the world towards perfection is dependent on primitive active and passive forces, which affect the substances. The phenomenal level, which can be perceived, consists of active and passive derivative forces. This mechanical level is only secondary to the change of mental states on the metaphysical level. The primitive forces are the source of harmony in the world. On Leibniz's later metaphysics, see Rutherford, *Leibniz and the Rational Order of Nature*. On Leibniz's dynamics and its relations to metaphysics, see Gale, *The Physical Theory of Leibniz*.

> "What a *conatus* is in a body, an affect is in a mind. However, some *conatuses* prevail while others are nullified by contrary *conatuses*. If a body strives to move both from east to west and along the same line, it is thrust backward by an equal force from west to east, then, because of the equality of the contrary *conatuses*, it will move in neither direction. In the same way the initial affects and motions of the mind cannot be destroyed, but they can be nullified by contrary affects, with the result that they lack efficacy."[565]

The inclinations in the soul could be seen as forces leading in different directions. Depending on the level of one's understanding, the agent can evaluate the inclinations present in the deliberative situation, and even modify them by developing himself in advance in a manner to be discussed later. In a complicated case the best choice is the optimum of different inclinations leading to the good. In this way the different inclinations "combine and the volition is the result of the conflict amongst them." (NE II, xxi, §39).[566]

This idea is presented in another way in *Essais de Theodicée*, in which Leibniz made a distinction between antecedent and consequent will in God's decision, as mentioned in Chapter 2.5.2. The consequent will is what Leibniz, following Hobbes, understood as the will executing the action and thus as the last stage of deliberative action. While the antecedent will in God's

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[565] "Quod in corpore est conatus, id in mente affectus, sunt autem conatus alii vincentes, alii contrariis conatibus elisi; si corpus tendat ab oriente in occidentam, et eodem tempore in eadem linea, vi aequali retroagatur ab occidente in orientam, ob mutuam conatuum contrariorum aequalitatem, utrinque quiescet; ita affectus quoque et motus primi tolli non possunt, at contrariis affectibus elide possunt, ut efficacia careant." A VI, 3, p. 141; Leibniz, *Confessio philosophi*, p. 89.

[566] In this sense we could follow Mark Kulstad's discussion of the passive and active forces of the mind, which are parallel to the forces in dynamics. The active force tends to distinct perceptions while the passive force, consisting of confused perceptions (passions), arrests this striving. See Kulstad, *Appetition in the Philosophy of Leibniz*, pp. 137-38. Note, however, as McRae points out, that the soul must be compared to the universe rather than to a body, since there can be no conflicts between souls, only within them. McRae, Leibniz*: Perception, Apperception, and Thought*, p. 61.

eliberation represents a single good, the consequent will looks towards the whole. If there is some other, preventive force, the antecedent volitions conflict with each other and the consequent volition results from all this conflict.[567]

Although Leibniz did not apply this scheme to human deliberation, it seems to me that it could be understood analogously. Of course, one should note that in human cognition the minute perceptions are always present in deliberation and consequently, the decision is less than absolutely perfect.[568] Even when men deliberate between antecedent wills, the inclinations consisting of confused perceptions are present and they might affect the judgement considerably by, for example, adding weight to some antecedent will.

The Leibnizian ideal of deliberating well takes into account all relevant (real) goods and strives to find a way to include all or at least most of them in the decision. One often has to compromise with respect to different goods, since it is reasonable to include most or all of them instead of choosing one and ignoring the others. This delicate balance of reasons is complicated in many cases and includes plural values.

Consequently, the rational decision is often more difficult to achieve than deliberating for or against some option or choosing between two alternative courses of action. In many cases the agent has to take into account several independent goods, which may be in competition and may differ in only a small degree. I will return

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567 See Parkinson, *Leibniz on Human Freedom*, p. 32f. Leibniz used an analogous argumentation in his jurisprudical work *De legum interpretatione, rationibus, applicatione, systemate* (1670), stating that all statements of law were susceptible to two argumentations. Antecedent argument is a proof (*Probatio*), and consequent argument is a conclusion based on the antecedent arguments (*Consequentia*). See A VI, 4, p. 2786.

568 (*Causa Dei*) G VI, p. 442. See *Essais de Theodicée*, §22: "…Dieu tend à tout bien…par une volonté antecedente. Il a une inclination serieuse à sanctifier et à sauver tous les hommes, à exclure le peché, et à empêcher la damnation. L'on peut même dire que cette colonté est efficace de soy (per se) c'est à dire, en sorte que l'effect s'ensuivroit, s'il n'y avoit pas quelque raison plus forte qui l'empêchat…" G VI, p. 116.

to Leibniz's models of deliberation shortly, but will first take a closer look at the role of passions.

10. 2. 2. Passions and Deliberation

While God is motivated by only true and good reasons, men may be moved by both true and good reasons and passions. According to Leibniz, the physiological analysis of passions is not sufficient in moral philosophy, although he admitted that this kind of analysis was useful in medicine.[569] The reasons for the existence of passions are to be found in cognition, for they consist of minute perceptions, which combined form temporary inclinations perceived as feelings of pleasure or pain. Leibniz's concept of passion is connected to the idea of a dynamic path to increasing perfection. In this he was influenced by Hobbes, and especially Spinoza, as mentioned.

The passions are analogous to the moral instinct in us. While the moral instinct is a permanent disposition, a passion is a minute and a sudden instinct, as Leibniz argued in a memoir related to his *Nouveaux systeme*.[570] The striving towards joy and away from

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[569] "…la connoissance physiologique des passions (à laquelle Mr. Descartes s'est attaché) ne sert pas assés dans la morale, quoyqu'elle ait son utilité dans la Medecine." (*Remarques sur les trois volumes intitulés: Characteriticks of Men, Manners, Opinions, Times in three volumes* [by Earl of Shaftesbury, Anthony Ashley Cooper (1671-1713]), G III, p. 427. However, in NE II, xxi, §41 Leibniz stated that although passions belong to the soul, "…j'adjouteray même que l'origine de chacunes est dans l'ame même en prenant les choses dans une certaine rigueur metaphysique; mais que neantmoins on a raison de dire que les pensées confuses viennent du corps, parce que là dessus la consideration du corps et non pas celle de l'ame fournit quelque chose de distinct et d'explicable." A VI, 6, p. 195. Thus the confused thoughts are in the soul, but they are often related to the lower monads that constitute the body.

[570] "Pour ce qui est des combats qu'on suppose entre le corps et l'ame, ce n'est autre chose que la diversité des penchans nés des pensées distinctes ou des pensées confuses, c'est-à-dire des raisons ou des instincts et passions: l'instinct estant pour ainsi dire une passion durable et née avec nous, et la passion estant comme un instinct passager et survenu; à quoy on pourroit joindre l'accoustumance qui tient le milieu entre ces deux sortes d'inclinations, estant plus durable que la passion, mais non pas née

sorrow, which is related to the moral instinct, is understood as the basis of human moral action, but the passions are usually regarded as harmful in human deliberation. The clearer and more distinct our perceptions are, the freer, more spontaneous and active our mind is since the confused element in judgement is weaker.

> "…if we take action to be an exercise towards perfection and passion to be the opposite, there is no action in the real substances until their perceptions…develop and become more distinct, as there is no passion in them until their perceptions become more confused."[571]

Leibniz was aware of Thomas Aquinas' taxonomy of passions (NE II, xx, §3 & 7),[572] but he did not discuss them except when he was commenting on Locke. He stated in NE II, xx, §9 that "the passions are not contentments or displeasures or beliefs, but endeavours – or rather modifications of endeavour – which arise from beliefs or opinions and are accompanied by pleasure or displeasure."[573] As an example he mentioned despair, anger and envy.[574]

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avec nous comme l'instinct." (*Addition à l'Explication du systeme nouveau touchant l'union de l'ame et du corps, encoyée à Paris à l'occasion d'un livre intitulé Connoissance de soy même*). G IV, p. 576-77.

571 "…prenant Action pour un exercice de la perfection et la passion pour le contraire il n'y a de l'Action dans les veritables substances, que lorsque leur perception…se developpe et devient plus distincte, comme il n'y a de passion que lorsqu'elle devient plus confuse. (*Nouveaux essais* II, xxi, §72) A VI, 6, p. 210; RB, p. 210.

572 Aquinas distinguishes between passions of different appetites. Passions of the concupiscible appetite (related to sensible good or sensible evil) consist of *amor* (love), *odium* (hate), *desiderium/concupiscentia* (desire), *fuga/abominatio* (avoidance), *delectatio/gaudium/laetitia* (pleasure/joy) and *dolor/tristitia* (pain/sadness). Passions of the irascible appetite (related to the difficulty of attaining sensible good or avoiding sensible evil) consist of *spes* (hope), *desperatio* (despair), *timor* (fear), *audacia* (daring) and *ira* (anger). Leibniz discussed only passions of the first kind. On Thomas Aquinas' views on passions, see Knuuttila, *Emotions in Ancient and Medieval Philosophy*, pp. 234-35.

573 "Les passions ne sont ny des contentemens, ou des déplaisirs, ny des opinions, mais des tendences, ou plustost des modifications de la tendence, qui viennent de l'opinion ou du sentiment, et qui sont

The passions are often related to sensuous pleasures, which may be signs, images or smells, and which have much more vivacity than the ideas of the understanding. In order to act virtuously, however, one must prefer long-term good to quick pleasures that prevent us from attaining genuine happiness.

> "The confused perception of some perfection constitutes the pleasure of the senses, but this pleasure may be [productive] of greater imperfections, as a fruit with a good taste and a good smell may conceal poison. This is why one must shun the pleasures of the senses, as one shuns a stranger, or sooner, a flattering enemy."[575]

There are several apparent goods present in deliberation, of which only one or a few represent real goods and the right course of action in the situation. In addition, there are several other goods that may represent the right action, but in some other situation. For example, talking in a loud voice is the right action when speaking to a person who has a hearing-problem, but it is a wrong action in a religious ceremony.

The conflict between different antecedent wills in deliberation may lead to other than optimal action, since the outcome of different antecedent goods is a compromise between different inclinations. Leibniz wrote to Bourguet:

> "The co-operative action of all tendencies towards good has produced the best, but since there are goods that are not compatible, this co-operation and this result could bring about the destruction of some good, and consequently some evil."[576]

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accompagnées de plaisir ou de déplaisir." (*Nouveaux essais* II, xx, §10). A VI, 6, p. 167; RB, p. 167.

[574] See NE II, xx, §11-13.

[575] "La perception confuse de quelque perfection fait le plaisir des sens, mais ce plaisir peut estre < > d'imperfections plus grandes que en naissant, comme un fruit de bon goust et de bonne odeur peut cacher un venin. C'est pourquoy il faut se defier des plaisirs des sens, comme on se defie d'un inconnu, ou plustost d'un ennemi qui flatte." (*La Félicité*, §6) Gr, pp. 579-580.

[576] "Le concours de toutes les tendences au bien a produit le meilleur: mais comme il y a des biens qui soit incompatabiles ensemble, ce concours et ce

The confused elements of judgement may predominate and, as a result, the mind may follow passions instead of clear and distinct ideas. If the judgement follows these appetitions, and the will inclines to them, there may develop a habit that constantly leads the agent in wrong directions.[577]

> "We may miss the right road by trying to follow the shortest one, just as the stone by falling straight down may too soon encounter obstacles that prevent it from getting at all close to the centre of the earth. This shows that it is reason and will that lead us towards happiness, whereas feeling and appetite lead us only towards [sensuous] pleasure."[578]

The rational analysis of problems may affect our voluntary acts by diminishing the effect of confused perceptions in deliberation. Once we learn to develop our reasoning, we can better discern clear and distinct ideas from confused ones. Reasoning is the root of our freedom – it gives us the possibility to control our goals.[579]

In *Nouveaux essais*, II, xxi, §8 Leibniz distinguished between two kinds of freedom: freedom to do and freedom to will. The latter is divided into two senses, the first standing in contrast with the imperfection or bondage of the mind that is an inner constraint, comparable to the effects of passions. Here there is a clear difference between man and God:

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resultat peut emporter la destruction de quelque bien, et par consequent quelque mal." G III, p. 558. Leibniz's letter concerned the divine decision-making, but I think this view can be applied to human deliberation also.

[577] The cognitive basis of habits is in the imagination. Hatfield, *The Cognitive Faculties*, p. 979.

[578] "On peur manquer le vray chemin en voulant suivre le plus court, comme la pierre allant droit peut rencontrer trop tost des obstacles qui [l'empechent] d'avancer assez vers le centre de la terre. Ce qui fait connoistre, que c'est la raison et la volonté qui nous menent vers le Bonheur, mais que le sentiment et l'appetit ne nous portent que vers le plaisir. (*Nouveaux essais* II, xxi, §41). A VI, 6, p. 194; RB, p. 194. It is worthwhile noting here that feeling the increase of perfection is an exception to the rule, since it applies to our senses as well as to our reason.

[579] Piro, *Leibniz and Ethics: the Years 1669-72*, p. 165.

> "The Stoics said that only the wise man is free; and one's mind is indeed not free when it is possessed by a great passion, for then one cannot will as one should, i.e. with proper deliberation. It is in that way that God alone is perfectly free, and that created minds are free only in proportion as they are above passion; and this is a kind of freedom which pertains strictly to our understanding."[580]

The second sense of freedom is employed when it is contrasted with necessity. It refers to the will alone, and that is why it is known as decision or choice (*le franc arbitre*). The freedom of the will is in this sense related to the recommendations for action the intellect presents to the will: they incline the will but do not necessitate it.

> "Free will…consists in the view that the strongest reasons or impressions which the understanding presents to the will do not prevent the act of the will from being contingent, and do not confer upon it an absolute or (so to speak) metaphysical necessity. It is in this way that I have the habit to say that the understanding can determine the will, in accordance with which perceptions and reasons prevail, in a manner which, although it is certain and infallible, inclines without necessitating."[581]

Leibniz called this kind of inclination without necessitating moral necessity, when the agent is persuaded by the good but is not

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[580] "…les Stoiciens disoient que le sage seul est libre; et en effect on n'a point l'esprit libre quand il se occupé d'une grande passion, car on ne peut point vouloir alors comme il faut, c'est-à-dire avec la deliberation qui est requise: C'est ainsi que Dieu seul est parfaitement libre, et que les esprits créés ne le sont qu'à mesure qu'ils sont au dessus des passions: et cette liberté regarde proprement nostre entendement." (*Nouveaux essais* II, xxi, §8). A VI, 6, p. 175; RB, p. 175.

[581] "…le franc arbitre…consiste en ce qu'on veut que les plus fortes raisons ou impressions, que l'entendement presente à la volonté, n'empechent point l'acte de la volonté d'estre contingent, et ne luy donnent point une necessité absolue et pour ainsi dire metaphysique. Et c'est dans ce sens que j'ay coutume de dire, que l'entendement peut determiner la volonté suivant la prevalence des perceptions et raisons d'une maniere qui lors même qu'elle est certaine et infallible, incline sans necessiter." (*Nouveaux essais* II, xxi, §8) A VI, 6, p. 175; RB, p. 175.

necessitated by it. It applies not only to man, but also to God, as shown in Chapter 1.

10. 2. 3. Weakness of the Will

The problem of *akrasia* (Greek for "lack of control" or "incontinence"), or weakness of the will (from Augustine onwards), has been formulated in many different ways, starting from Plato's *Protagoras* and *Republic* and Aristotle's *Nicomachean Ethics*.[582] Perhaps the simplest way to describe it is to say that *akrasia* means acting against one's better judgement. The *akrates* (one who acts akratically) acts intentionally and voluntarily against what he or she judges to be the best in the situation.

A classic example of akratic behaviour is making the wrong choice because some sensual pleasure persuades the person to act against what he or she judges to be the best. We might smoke a cigarette when offered one even if we have decided to give up smoking. Although akratic wrong-doing seems to be an unavoidable part of our daily lives, contemporary philosophers have tried to find different ways of explaining it away, as a compulsory, that is, unfree, action, for example.[583]

There is a very interesting discussion about the weakness of the will and its role in moral choice in *Nouveaux essais*, in which Leibniz opposes Locke's view in *An Essay Concerning Human Understanding,* second book, Chapter xxi, entitled *Of power*.[584] Locke's views on deliberation were strange. He denied that the will was necessarily directed to the future long-term good and thought that the present good was the most important goal in

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[582] See Plato, *Protagoras*, 357d-e, Aristotle, *Nicomachean Ethics*, ch. VII.

[583] See, for example, Watson, *Skepticism about Weakness of Will* and Mele, *Is Akratic Action Unfree*?

[584] This theme has received little or misguided attention by Leibniz scholars. For example, John Hostler denied the possibility of *akrasia* in Leibniz's thought in his well-known *Leibniz's Moral Philosophy*. My main source, apart from the *Nouveax essais*, was Ezio Vailati's article *Leibniz on Locke on Weakness of Will.*

moral action.[585] Men strove to abolish the uneasiness or pain they felt and attained temporary happiness by choosing the absent good to which they felt it was related even though they were well aware of the long-term good involved. He apparently considered weakness of the will to be the normal state and virtuous action, related to the long-term good, an exception.

Once happiness has been achieved by gaining the absent good, the uneasiness soon returns and forces the agent to strive for some other absent good. Thus Locke's view was that passions overcame reason in practical rationality because they were stronger and more tempting than the goals set by reason. The only way to resist uneasiness, as he argued in the second edition of his *Essay*, is to suspend action and deliberate more thoroughly between different options.

In his commentary on Locke's work, *Nouveaux essais sur l'entendement humain*, Leibniz argued that uneasiness is not always a bad thing, and that its removal does not always produce satisfaction or pleasure (II, xxi, §29). Even joy includes some disquietness – in other words, at each moment there is a combination of different unconscious inclinations present in judgement that is perceived as disquietness.[586]

Leibniz believed that there always were confused elements (formed by minute perceptions) present in deliberation, while Locke saw uneasiness as some kind of longing for the absent good. Thus all acts of will are accompanied by some uneasiness, which only occasionally intensifies to the point of becoming full-blown.

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585 "…Good, the greater good, though apprehended and acknowledged to be so, does not determine the will, until our desire, raised proportionally to it, make us uneasy in the want of it." (II:21:35; E, p. 253).

586 (II, xx, §8). The term (*inquietude*) is Leibniz's version of the concept of uneasiness. See NE II, xx, §6. Compare also II, xxi, §29 : "...inquietude...n'est pas tousjours un deplaisir, comme l'aise où l'on se trouve, n'est pas tousjours une satisfaction ou un plaisir. C'est souvent une perception insensible qu'on ne sauroit distinguer ny démêler qui nous fait pancher plustost d'un costé que de l'autre, sans qu'on en puisse rendre raison." A VI, 6, p. 183; RB, p. 183. See also NE II, xx, §7, in which Leibniz stated that during the deepest sorrow one can find joy in music, for example.

According to the Leibnizian view, confused inclinations are not the goods or sufferings themselves, only a foretaste of them in the form of minute perceptions. Thus there is usually no one single desire such as Locke's uneasiness, but numerous spurs to action that may be mutually incompatible. All these inclinations affect the volition in the manner discussed above.

It could be inferred from Leibniz's discussion that moral wrong-doing happens in two ways. In the first case the deliberator is unable to discern the real from the apparent good. The minute perceptions blur our judgement and make us believe that the wrong act is right in a given situation. The apparent good is mistakenly chosen instead of the real good. This is not a case of *akrasia*, strictly speaking, and is rather the sheer inability (ignorance or error) to discover the real good in question. The struggle between the flesh and the spirit is nothing more than a conflict between two different kinds of endeavours - those coming from confused thoughts and those coming from distinct ones (NE II, xxi, §35). If the moral agent does not have a sufficiently developed understanding, he or she may easily err in his or her judgement of the good.

> "Confused thoughts often make themselves clearly sensed, whereas our distinct thoughts are usually only potentially clear: they could actually be so if we only applied ourselves to getting through to the senses of the words or symbols; but since we do not do that, through lack of care or lack of time, what we oppose lively feelings with are bare words, which are too faint."[587]

In the second, more serious case, the real good, although it is present and apperceived, is rejected – it does not act as the

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[587] "Les pensées confuses souvent se font sentir clairement, mais nos pensées distinctes ne sont claires ordinairement qu'en puissance: elles pourraient l'estre, si nous voulions nous donner l'application de penetrer les sens des mots ou des caracteres, mais ne le faisant point, ou par negligence, ou à cause de la brieveté du temps; on oppose des paroles nuës, ou du moins des images trop foibles à des sentimens vifs." (*Nouveaux Essais* II, xxi, §35). A VI, 6, pp. 186-87; RB, p. 186-187. Leibniz was not entirely clear here. By thoughts he seemed to mean perceptions and by the term clear he seemed to refer to clear but confused perceptions.

motivational factor. This kind of case represents akratic action in the true sense. The weak-willed agent judges one course of action to involve the greater good, but is inattentive to it, while he or she is sensitive to the good involved in the worse course of action.[588] These apparent goods are often spiced up by lively sensual qualities, which arise from minute perceptions such as colour, smell, taste and other sensual pleasures. This is why the apparent good is more desirable to a weak-willed person than the real good, which may be less tempting. To use Leibniz's example, a person who perceives the smell of fresh cakes rejects his or her diet and gives in to his or her desire.[589]

The real good recommended by the intellect is rejected by the will, which instead chooses the less good option, that is the apparent good. The consequent volition is directed to the apparent good instead of the real good, which may be the second-best alternative.

> "It is a daily occurrence for men to act against what they know; they conceal it from themselves by turning their thoughts aside, so as to follow their passions. Otherwise we would not find people eating and drinking what they know will make them ill or even kill them."[590]

Often the real goods in deliberation, such as virtue, perfection and the afterlife, are present in the form of symbols or blind thoughts, which are faint compared to the more concrete, lively images of

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588 Vailati, *Leibniz on Locke on Weakness of Will*, p. 219. This process is similar to Augustinus' theory of the birth of sin in *De Trinitate*: first a suggestion (*suggestio*) is made, in this case by appetitions, then a pleasure (*delectatio*, in Leibniz's case sensuous pleasure) is formed – the first stage of desire – and finally the will accepts the suggestion (*consentio*). See Knuuttila, *The Emergence of the Logic of Will in Medieval Thought*, p. 211. For a discussion on medieval commentaries on Augustinus' doctrine, see Knuuttila, *Emotions in Ancient and Medieval Philosophy*, p. 179f.

589 See *Nouveaux essais* II, xxi, §35; A VI, 6, p. 187.

590 "Il arrive tous les jours que les hommes agissent contre leur connoissances, en se les cachant à eux mêmes lorqu'ils tournent l'esprit ailleurs, pour suivre leur passions: sans cela nous ne verrions pas les gens manger et boire de ce qu'ils savent leur devoir causer des maladies et même la mort." (*Nouveaux essais* I, ii, §11). A VI, 6, p. 94; RB. p. 94.

food, drink and sensual pleasures that accompany clear but confused perceptions. However, once the mind is sufficiently well developed it becomes sensitive to the real good:

> "Sometimes they have the idea of an absent good or evil, but only very faintly, so it is no wonder that it has almost no influence on them. Thus, if we prefer the worse it is because we feel the good it contains but not the evil it contains or the good that exists on the opposite side…the finest moral precepts and the best prudential rules in the world have weight only in a soul that is as sensitive to them as to what opposes them."[591]

For this reason one should be attentive and alert in one's deliberations. The good is present as blind thoughts or other non-sensory information, but it does not act as a motivational factor for the akratic person. There is always the possibility of theoretical *akrasia*: the good may be outweighed by more vivacious images or symbols that represent some lesser good, although the moral agent is aware of the real good present in the situation.

This fact is also applicable to practical rationality – for example, the real good could be made more tempting by presenting it in a favourable light (compare, for example, stained-glass windows in churches), and the use of figures and illustrations in education highlights the most important aspects.

Proper volition is also endangered by conditional will or *velleitas*. This concept was used by some medieval scholars[592] and

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[591] "Quelques fois ils ont des idées d'un bien ou d'un mal absent, mais très foibles; ce n'est donc pas merveille si elles ne touchent gueres. Ainsi si nous preferons le pire, c'est que nous sentons le bien qu'il renferme, sans sentir ny le mal qu'il y a, ny le bien qui est dans le parti contraire…les plus beaux preceptes de morale avec les meilleures regles de la prudence ne portent coup, que dans une ame, qui y est sensible …et qui n'est pas plus sensible à ce y est contraire" (*Nouveaux essais* II, xxi, §35). A VI, 6, p. 186; RB, p. 186.

[592] Leibniz cited as a source St. John Damascene, *De fide orthodoxa* II 29 in a letter to Spanheim, but argues elsewhere that the distinction was made by writers before Damascene. Parkinson, *Leibniz on Human Freedom*, p. 30, n. 25. For the history of conditional willing, see Knuuttila & Holopainen,

refers to a case in which the agent would will something if a greater evil, or even a greater good, were not feared or hoped for in the opposite case. Leibniz defined this as an imperfection or a defect in the will, which prevents it from rising to full power.[593] Because of the condition in question, the will is divided and the volition is not complete – it contains some imperfection (for example, it may cause harm to an acquitance), and this is why the best possible action is not chosen.[594] In this case the motive is not an inclination because it represents no true possibility: it is more of a conditional willing – a case of "I would if I could" (*liberet si liceret*).[595]

When the intellect cannot successfully recommend the best course of action, choosing the wrong one may develop into a habit and the real goods are continually ignored: the agent can manipulate the mind to believe that an apparent good is in fact a real good. For example, although I have been forbidden by my doctor to eat chocolate, I can still make myself believe that it is good for my health and I may end up eating it daily. Thus our decisions are manipulated and volitions are produced:

> "This one thing we recognize to be within the power of will – to command attention and exertion. And so the will, though it does not bring about any opinion in us, can nevertheless contribute to it obliquely. Thus it happens that men often finally come to believe what

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Conditional Will and Conditional Norms in Medival Thought and Knuuttila, *Emotions in Ancient and Medieval Philosophy*, p. 208f.

[593] *Nouveaux essais*, II, xxi, §30, A VI, 6, p. 183.

[594] The will in itself is always directed to the good, as judged by the intellect: "...je ne voudrois pas qu'on crût...qu'il faille abandonner ces anciens axiomes, que la volonté suit le plus grand bien, on qu'elle fuit le plus grand mal, qu'elle sent." (*Nouveaux essais* II, xxi, §35). A VI, 6, p. 185; RB, p. 185. In this sense the human will imitates the Divine will: while the human will is directed to the apparent good, God's will is directed to the actual good. Davidson, *Video Meliora Proboque, Deteriora Sequor*, p. 240.

[595] See *Essais de Theodicée*, §404, G VI, p. 357.

> they will to be true, after having accustomed the mind to attend most strongly to the things which they favour."[596]

The development of the intellect may also happen the other way around. The deliberator may reflect on his or her own decisions and analyse the effect of confused perceptions on them, and in the future prepare himself or herself in advance for similar problematic situations.[597] Since the will commonly follows the recommendations of the intellect, one has to develop the intellect in order to deliberate more effectively. The stronger the "voice" of reason is, in other words the more clearly one perceives, the less the will inclines to goals other than the one recommended by the intellect. Thus developing the understanding helps to strengthen the will, and when the will is strong it can eventually direct the attention to the right goals.

> "Men choose objects through the will, but they do not choose their present volitions; these spring from reasons and dispositions. It is true, however, that one can seek new reasons for oneself, and with time give oneself new dispositions; and by this means one can also obtain for oneself a will one had not and could not have given oneself forthwith."[598]

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[596] "Unum hoc penes voluntatem esse agnoscimus, ut attentionem et studium imperet, atque ita etsi sententiam in nobis non faciat, potest tamen ad eam oblique conferre. Ita fit ut saepe homines quod verum esse vellent, tandem credant, postquam assuevere animum, ut ad attendat potissimum quae favent." (*Animadversiones in partem generalem Principiorum Cartesianorum*) G IV, p. 356-57; L, pp. 384-85.

[597] In a recent conference Leibniz: What kind of Rationalist, Tel Aviv and Jerusalem, 30.5. – 2.6. 2005, Hans Poser argued in his paper *Innate Ideas as the Cornerstone of Rationalism: The Problem of Moral Principles* (forthcoming) that the wise can find moral principles by reflecting on the recommendations or inclinations of the moral instinct. In this way these inclinations could be understood as the moral necessities of a good man. This interpretation seems to be in line with my own.

[598] "...les hommes choisissent les objets par la volonté, mails ils ne choisissent point leur volontés presentes; elles viennent des raisons et des dispositions. Il est vray cependant, qu'on se peut chercher de nouvelles raisons et se donner avec le temps de nouvelles dispositions; et par ce

By training the mind and preparing it in advance for future temptations one learns to withdraw from action, and to pause to contemplate whether the action should be performed or not (NE II, xxi, §47).[599]

> "What is required is that the mind be prepared in advance, and be already stepping from thought to thought, so that it will not be too much held up when the path becomes slippery and treacherous."[600]

Thus one can develop the mind in order to resist passions in the same manner as in self-deception, but in the opposite direction. The *akrates* must be cured by reducing the power of minute perceptions, and this happens through improving our reasoning and acquiring more knowledge. If the will follows the recommendations of the intellect without being sensitive to inclinations consisting of confused perceptions, the road to virtue is secured.

> "…we can only will what we think good, and the more developed the faculty of understanding is the better are the choices of the will. And, in the other direction, in so far as man wills vigorously, he determines

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moyen on se peut encor procurer une volonté qu'on n'avoit pas, et qu'on ne pouvoit pas se donner sur le champ." (*Rexflexions sur l'ouvrage que N. Hobbes a publié en Anglois, de la liberté, de la Necessité et du Hazard*) G VI, pp. 391-92; H, pp. 396-397.

[599] Epicurus presented his idea of a life calculus, which bears a certain likeness to Leibniz's ideas. As quoted by Diogenes Laertius, he stated: "While therefore all pleasure because it is naturally akin to us is good, not all pleasure is choiceworthy, just as all pain is an evil and yet not all pain is to be shunned. It is, however, by measuring one against another, and by looking at the conveniences and inconveniences, that all these matters must be judged." Diogenes Laertius (X, 129), *Lives of Eminent Philosophers* II, p. 655.

[600] "Il faut donc que l'esprit soit preparé par avance, et se trouve déja en train d'aller de pensée en pensée, pour ne se pas trop arrester dans un pas glissant et dangereux.." (*Nouveaux essais*, II, xxi, 47) A VI, 6, pp. 195-96; RB, pp. 195-96.

> his thoughts by his own choice instead of being determined and swept along by involuntary perceptions."[601]

Good judgement and good decisions can be achieved by fostering self-perfection, by increasing one's knowledge of the world and its creator, and by learning to distinguish true goals from mere temporary ones. The inclinations and their directions may be modified by applying methods that enable us to develop the clearness of our perceptions and improve our attention, and thus to gain reasonable control over the minute perceptions. In his critique of Descartes' *Principia philosophiae* (*Animadversiones in partem generalem Principiorum Cartesianorum*), Leibniz provided a few methods for remedying errors of judgement:

> "The remedy for our errors is the same as that for errors in calculation – to pay attention to the matter and form, to proceed slowly, to repeat and vary our operations, to introduce tests and checks, to divide longer chains of reasoning into parts so that the mind gets a breathing spell, and to confirm each part in turn through special proofs. And since we are sometimes in a hurry to act, it is an important matter to have acquired presence of mind through practice, as do those who are still able, in the midst of noise and without written calculations, to compute very large numbers."[602]

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601 "…on ne sauroit vouloir que ce qu'on trouve bon, et selon que la faculté d'entendre est avancée, le choix de la volonté est meilleur: comme de l'autre costé, selon que l'homme a de la vigueur en voulant, il determine les pensées suivant son choix, au lieu d'estre determiné et entrainé par des perceptions involontaires." (*Nouveaux essais* II, xxi, §19) A VI, 6, p. 180; RB, p. 180.

602 "Remedium quoque errorum nostrorum idem est, quod errorum calculi, ut materiae formaeque attendamus, ut procedamus lente, ut repetamus operationem variemusque, ut examina instituamus sive comprobationes, ut longiores raticinationes in partes secemus, quo resprirare mens possit, partemque quamlibet peculiaribus comprobationibus confirmemus. Et quoniam in agendo aliquando festinandum est, magna res est, praesentiam animi sibi comparasse assuescendo, velut illi qui in tumultu atque etiam sine scriptura aut calculis, non ideo minus ingentes numeros computare possunt…"

Moreover, we should not take past perceptions and memories of our experiences for granted, but repeat experiments if possible, and try to form as adequate a judgement of the thing in question as we can.[603] The right decision will bear fruit in later deliberations just as a sentiment of perfection creates the anticipation of future sentiments of the same kind. We are not able to affect our choices directly by willing, but we can affect them indirectly:

> "We certainly speak very incorrectly when we speak of willing to will. We do not will to will, but rather will to do; and if we did will to will, we should will to will to will, and so on *ad infinitum*. However, we must recognize that by our voluntary actions we often indirectly prepare the way for other voluntary actions; and that although we cannot will what we want to, just as we cannot judge what we want to, we can nevertheless act ahead of time in such a way that we will eventually judge or will what we would like to be able to judge or will today. We attach ourselves to people, reading material and ways of thinking that are favourable to a certain faction, and we ignore whatever comes from the opposite faction; and by means of these and countless other devices, which we usually employ unwittingly and without set purpose, we succeed in deceiving ourselves or at least changing our minds, and so we achieve our own conversion or perversion depending on what our experience has been." [604]

(*Animadversiones in partem generalem Principiorum Cartesianorum*) G IV, pp. 361-62; L, p. 388.

[603] (*Animadversiones in partem generalem Principiorum Cartesianorum*) G IV, p. 362.

[604] "Il est vray qu'on parle peu juste, lorsqu'on parle comme si nous voulions vouloir. Nous ne voulons point vouloir mais nous voulons faire, et si nous voulions vouloir, nous voudrions vouloir vouloir, et cela iroit à l'infini: Cependant il ne faut point dissimuler que par des actions volontaires nous contribuons souvent indirectement à d'autres actions volontaires, et quoyq'on ne puisse point vouloir ce qu'on veut, comme on ne peut pas même juger ce qu'on veut; on peut pourtant faire en sorte par avance, qu'on juge ou veuille avec le temps ce qu'on souhaiteroit de pouvoir vouloir ou juger aujourdhuy. On s'attache aux personnes, aux lectures et aux considerations favourables à un certain parti, on ne donne point d'attention à ce qui vient du parti contraire, et par ces adresses et mille autres qu'on employe le plus souvent sans dessein formé, et sans y

Thus understanding may be developed by means of practical devices. In his memoir on the controversy between Hobbes and Bishop Bramhall, Leibniz comments on Hobbes' example of hunger:

> "It does not depend on my will to be hungry or not, but rests with my will to eat or not to eat; yet in the time to come, it rests with me to be hungry, or to prevent myself from being so at such and such an hour of the day, by eating beforehand. In this way it is often possible to avoid bad volitions."[605]

We could try to substitute our bad habits with good ones.[606] In *Nouveaux Essais* Leibniz argued that men should make themselves laws and rules for the future and carry them out strictly, avoiding situations that could corrupt them. They should render their conceptions of real goods more vivid by engaging in the useful activities the philosopher recommends, which include farming, gardening, collecting curiosities, making experiments and inquiries, making conversation and reading. Idleness is to be avoided (II, xxi, §35). Good company may help in developing virtue, since perfection is intensified by reflecting on others' perfections.[607]

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penser, on reussit à se tromper ou du moins à se changer, et à se convertir ou pervertir selon qu'on a rencontré." (*Nouveaux essais* II, xxi, §23). A VI, 6, p. 182; RB, p. 182. For a similar argument, see also *Essais de Theodicée*, §51.

605 "Il ne depend pas de ma volonté d'avoir faim, ou non; mais il depend de ma volonté de manger, ou de ne point manger: cependant pour le temps à venir, il depend de moy d'avoir faim, ou de m'empêcher de l'avoir à une pareille heure de jour, en mangeant par avance. C'est ainsi qu'il y a moyen d'eviter souvent de mauvaises volontés…" (*Reflexions sur l'ouvrage que M. Hobbes a publié en Anglois, de la Liberté, de la Necessité et du Hazard*, §5) G VI, p. 392; H, p. 397.

606 Seidler, *Freedom and Moral Therapy in Leibniz*, p. 28.

607 In *Essais de Theodicée*, Leibniz's recommendations are of the same kind: "Le bon naturel, l'education avantageuse, la frequentation des personnes pieuses et vertueuses, peuvent contribuer beaucoup à mettre les ames dans cette belle assiette; mais ce qui les y attache le plus, ce sont les bons principes." (*Essais de Theodicée*, preface). G VI, p. 28.

Remedies for strong passions such as love or addiction are to be found in change (such as a voyage), or in gradual withdrawal from the object that causes the passion.[608] As an example Leibniz mentioned Francisco Borgia, the general of the Jesuits, who was given to drinking heavily when he was a member of fashionable society.

> "…he gradually reduced his intake to almost nothing by each day letting a drop of wax fall into the flagon he was accustomed to emptying."[609]

Gradual withdrawal from the object of passion and replacing bad activities with good ones bring about pleasure of the mind and, eventually, happiness. Unlike Locke, Leibniz considered happiness to be a process rather than a state. Whereas the Stoics thought that one should get rid of the passions once and for all, Leibniz believed that living virtuously was a gradual process involving good habits and getting to know God and His perfections better.

It is possible to test one's alertness by reflecting on one's deeds, as Leibniz stated in NE II, xxi, §47:

> "It helps…if one becomes accustomed to withdrawing into oneself occasionally, rising above the hubbub of present impressions – as it were getting away from one's own situation and asking oneself "Why am I here?", "Where am I going?", "How far have I come?", or saying "I must come to the point, I must set to work!""[610]

If all these methods prove to be unsuccessful, there is still another way of improving our moral conduct: we could suspend decisions in cases in which there is not sufficient reason to choose one

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[608] Vailati, *Leibniz on Locke on Weakness of Will*, p. 227.

[609] "…se reduisit peu à peu au petit pied…en faisant tomber chaque jour une goutte de cire dans le bocal qu'il avoit accoustumé de vuider." (Nouveaux essais II, xxi, §35) A VI, 6, p. 187; RB, p. 187.

[610] "…il est bon de s'accoustumer à se recueillir de temps en temps, et à s'elever au dessus du tumulte present des impressions, à sortir pour ainsi dire de la place où l'on est: à se dire: dic cur hic, respice finem, Où en sommes nous? à propos ou venons au propos, venons au fait." A VI, 6, p. 196; RB, p. 196.

particular course of action, or when we are possessed by a strong passion.[611] This happens by the direct intervention of the will.[612]

> "We can and very frequently do suspend choice, particularly when other thoughts break into our deliberations. So that, although the action about which we are deliberating must exist or not exist, it does not follow at all that we must necessarily decide on its existence or non-existence; for its non-existence may come about for want of a decision."[613]

By suspending the decision we are able to evaluate the situation anew and repeat the deliberation, taking into account all of the elements. Thus the will may, in a sense, reject the recommendation of the intellect and force it to reconsider, especially when some new element is introduced. This is also the case when the recommendation of the intellect is "weak", in other words when

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[611] This method was popularized by Jean Buridan and was also employed by Locke in the second edition of the *Essay*.

[612] It is worth noting that Leibniz did not explicitly state that it is the will that suspends decision. For example, in *De libertate et gratia* (1680-84?) he claimed that the mind in general has the ability to suspend judgement: "Mens habet facultatem non tantum alterutrum eligendi, sed et suspendendi judicium; nulla potest esse tam evidens apparentia boni (praeterquam summi) quin mens possit si velit suspendere judicium ante ultimam decisionem, idque fit dum alia cogitanda menti offeruntur, atque ipsa vel ad ea abripitur sine deliberatione, vel deliberans concludit de aliis rebus potius cogitare. Si mens non divertatur a deliberatione, certo sciri potest quid sit electura, certo enim electura est quod melius illi apparet." (A VI, 4, p. 1456). However, since the argument in *Nouveaux essais* (see also *Discours de metaphysique*, §30) is clearly presented in the context of the freedom of the will, I assume that he meant it was the will, rather than the intellect, that actually performed the suspension.

[613] "…on peut suspendre son choix, et que cela se fait bien souvent, surtout lors que d'autres pensées interrompent la deliberation; ainsi quoyque il faille que l'action sur la quelle on delibere existe ou n'existe pas, il ne s'ensuit point qu'on en doive resoudre necessairement l'existence ou la nonexistence; car la nonexistence peut arriver encore faute de resolution. (*Nouveaux essais* II, xxi, §23) A VI, 6, p. 181; RB, p. 181.

there is no clear recommendation available, such as in the case of *velleitas* discussed above.[614]

> "The execution of our desire is suspended or prevented when it is not strong enough to arouse us and to overcome the difficulty or discomfort involved in satisfying it. This difficulty sometimes consists merely in an insensible laziness or slackness, which inhibits us without our paying heed to it; it is greatest in people brought up in indolence, in those of a phlegmatic temperament, and in those discouraged by old age or failure."[615]

As the example of hunger shows, the will may also suspend decisions independently by willing vigorously. Thus, although the intellect inclines the will, it is the will that ends the deliberation and makes the final decision because it has the power to command attention. Although the recommendation of the intellect is known, the will can divert itself to other objects, which may lead to akratic action:

> "Unless the will is diverted to other thoughts, it will certainly choose that which appears best. And in this indirect way we resist our intellect and our self-knowledge, while we change the object of thought, whether by a deliberate plan or by the custom of sliding into what is pleasant. Grace helps us in two ways: one insofar as it

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[614] In a letter to Magnus Wedderkopf from 1671 Leibniz argued that we suspend our judgements because of conditions and alternatives, that is because the circumstances in question are insufficiently explored. A II, 1, p. 117.

[615] "L'execution de nostre desir est suspendue ou arrestée, lors qu'il n'est pas assez fort pour emouvoir, et pour surmonter la peine ou l'incommodité qu'il y a de satisfaire. Et cette peine ne consiste quelques fois que dans une paresse ou lassitude insensible, qui rebute sans qu'on y prenne garde, et qui est plus grande dans des personnes elevées dans la mollesse, ou dont le temperament est phlegmatique, ou qui sont rebutées par l'âge ou les mauvais succés." (*Nouveaux essais*, II, xxi, §47) A VI, 6, p. 195. Compare the discussion on "flying thoughts" in Chapter 4.3.3. and *Nouveaux essais* II, xxi, §12.

> illuminates the intellect, the other insofar as it gives attention and fixes the mind so that it may not move from the object."[616]

Although careful manipulation of the mind may help the will in directing its attention to the right objects, it could also change its preference independently. For this reason the will could be considered an active part of deliberation, and not a mere passive and mechanical act of approval of whatever the intellect presents to it.

Sean Greenberg recently argued that Leibniz's conception of the mind led him to locate freedom in intelligence alone.[617] I think the above passage show that, even though the will may be led astray (weakness of the will), it could be considered an active part of deliberation, although it usually follows the recommendations of the intellect. Thus I find Greenberg's view exaggerated: compare *Essais de Theodicée*, §51, in which Leibniz stated:

> "…we do not always follow the latest judgements of practical understanding when we resolve to will: but we always follow, in our willing, the result of all the inclinations that come from the direction both of reasons and passions, and this often happens without an express judgement of the understanding."[618]

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616 "Quod si sine deliberatione divertenda est, habemus intentum, scitur enim mentem nihil esse electuram. Quod si deliberatio secutura de prosequenda an mutanda cogitandi materia, hinc de nova ista deliberatione eadem rursus ratiocinatio institui potest et proinde tandem vel venietur ad diversionem sine deliberatione, quae praevideri potest ex natura intellectus, vel conclusionem sine diversione, quae qualis futura sit praevideri potest ex natura voluntatis. Voluntas enim nisi ad alias cogitationes divertatur certo eliget quod melius apparet. Atque hac obliqua arte nos intellectui nostro ac conscientiae opponimus, dum mutamus cogitandi objectum sive deliberato consilio, sive consuetudine ad grata delabendi. Gratia duobus modis nos juvat, uno dum intellectum illustrat, altero dum attentionem dat figitque Mentem ne objectum mutet." (*De libertate et gratia*) A VI, 4, p. 1457.

617 See his *Leibniz Against Molinism*.

618 "Nous ne suivons pas aussi tousjours le dernier jugement de l'entendement practique, en nous determinant à vouloir; mais nous suivons tousjours, en voulant le resultat de toutes les inclinations qui

Leibniz was apparently referring to a case in which some new element, such as a passion, broke into deliberation after the intellect had recommended some course of action. Thus this description may apply to weakness of the will: the agent has a considered recommendation for an action, but a sudden passion leads the will astray if it has not the required strength. When the will is strong enough, we can resist the passions:

> "Once we are in a position to stop our desires and passions from taking effect, i.e. to suspend action, we can find ways of fighting against them, either by contrary desires and inclinations or by diversion, in other words by occupying ourselves with other matters. It is through these methods and stratagems that we become masters of ourselves, and can bring it about that we have certain thoughts and that when the time comes we will will according to our present preference and according to reason's degrees."[619]

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viennent tant du côté des raisons que des passions, ce qui se fait souvent sans un jugement expres de l'entendement." GP VI, p. 130; H, p. 151. Another similar passage occurs in Leibniz's fifth letter to Clarke, §11: "J'ay fait voir aussi, que notre volonté ne suit pas tousjours precisement l'entendement practique, parce qu'elle peut avoir ou trouver des raisons pour suspendre sa resolution jusqu'à une discussion ulterieure." G VII, p. 391.

[619] "Or estant une fois en estat d'arrester l'effect de nos desirs et de nos passions c'est à dire de suspendre l'action, nous pouvons trouver les moyens de les combattre, soit par des desirs ou des inclinations contraires soit par diversion c'est à dire par des occupations d'une autre nature. C'est par ces methods et des artifices que nous devenons comme maistres de nous mêmes, que nous pouvons nous faire penser et faire vouloir avec le temps ce que nous voudrions vouloir; et ce que la raison ordonne." A VI, 6, p. 196; RB, p. 196.

Thus strength of will is an important part of a virtuos life and of freedom. It is at the same time a consequence of good understanding and the adoption of good habits, and a method that enables one to develop understanding itself. By willing vigorously we may be able, in time, to choose the objects of our attention and to make better judgements, since the pleasure of the mind we experience in virtuous action motivates us to act accordingly in the future.

11. Models of Decision-making

11. 1. Moral Calculus

So far I have discussed Leibniz's views on making decisions on a general, abstract level. By examining his writings on practical matters, however, it is possible to find some common ways of handling different problematic cases.[620] Thus it is possible to reconstruct a general model to be understood as a heuristic device to help in making rational decisions. Elaborating on this model – or in fact on two different models, as I argue below - will occupy the rest of this study. My presentation is based on a combination of the views of Marcelo Dascal on the one hand and Jaakko Hintikka and Simo Knuuttila on the other, and so as far as I know this distinction has not been made elsewhere. My other contribution to the discussion is to present some case studies in which Leibniz seemed to apply these models.

I have already shown how Leibniz postulated two forms of deliberation. Sometimes the options are mutually exclusive and one has to decide on one or make a compromise involving both. This first kind is applicable in simple situations, in which there is a need to decide for or against some position, or when the deliberator strives for a compromise and the goods are distributed among the concerned parties. The second kind is more complicated, since the goods are not mutually exclusive and one

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[620] For an overview on Leibniz's methods of solving controversies, see Leibniz, *The Art of Controversies*, Introductory Essay.

has to consider all of them at the same time. In this case the deliberator should pick the goods that contribute most to the desired goal, and try to form an optimum between them.

These two situations require two different kinds of decision models. In what follows I will describe these models, leaning mostly on the writings of Dascal, Hintikka and Knuuttila. I will also present some case studies in which Leibniz seemed to apply them more or less implicitly. Before going into the details, however, I will offer a further distinction between two kinds of considerations that are relevant to both types. These two considerations refer to different stages of deliberation:

a) Choosing the good or goods in each situation
b) Estimating the likehood of the occurrence of the good in question.

The first consideration is related to the assessment of the good and the second to the consequences of the proposed act or settlement. Leibniz made the distinction in *Nouveaux essais* II, xxi, §66:

> "There are these two heterogeneous considerations (which cannot be compared) – the magnitude of the consequence and the magnitude of the consequent. So in their attempts to compare them the moralists have become muddled, as can be seen from their writings on probability."[621]

If we take these two considerations together we arrive at the doctrine Nicholas Rescher calls moral calculus. This is a general method for estimating the magnitude of something good or bad, and is to be understood as a product of its inherent value and the probability of its realisation, as follows:

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[621] "Comme ce sont deux considerations heterogenes (ou qu'on ne sauroit comparer ensemble) que celle de la grandeur de la consequence, et celle de la grandeur du consequent; les Moralistes en les voulant comparer se sont assez embrouillés, comme il paroist par ceux qui ont traité de la Probabilité." A VI, 6, pp. 205-206; RB, pp. 205-206.

(Inherent value) x (probability of eventuation).[622]

It is easy to see how this kind of estimation in the Leibnizian framework concerns all moral deliberations. In addition to considering what is the good in each situation, we also have to consider whether the proposed act or settlement is at all likely to promote that good. Since Leibniz was a consequentialist and regarded virtuous action as contributory, not only to general perfection, but also to one's own happiness, in his view moral agents should consider both the act and its consequences.

Rescher drew his inspiration from Leibniz's work on conditional rights, as discussed in Chapter 6.2.2. The agent is able to estimate the total value of the proposed act by considering the good in each situation on the one hand, and the likehood that the proposed act will promote this good on the other. If we have, for example, acts A and B, it may be that act A is very good, but it is uncertain whether it will have the desired effect. While act B is less good, it may be more probable that the desired effect will follow. Thus in this case it is rational to choose act B. Expressed in terms of moral calculus, we could state that

Act A has an inherent value of 5 x probability of eventuation of 3
Act B has an inherent value of 4 x a probability of eventuation of 4.

Thus the total overall value of act A is 15 and of act B is 16.[623] As I continue with my presentation of these models of deliberation I am assuming that both kinds of considerations are inherent in both (as I will explain with respect to both).

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[622] See Rescher, *Leibniz, Keynes, and the Rabbis on a Problem of Distributive Justice*, p. 344.
[623] Compare also the example in *Elementa juris naturalis* in Chapter 6.2.2.2.

11. 2. The Pair of Scales Model

There may be two kinds of situations in simple cases in which the values are independent of each other. The more straightforward one is the either-or-situation, in which one has to deliberate between two independent alternatives: should I stay or should I go? The options exclude each other and one cannot help but decide between them.

A more complicated variant of this is when the two parties have a claim to some good and a compromise is sought. In this case the judge or the middleman strives to distribute some of the goods to one side and some to the other, and both parties are persuaded to make some concessions so that a rational compromise or agreement can be found. This rational balancing, typical of political or economic controversies, may also be performed in several stages (in cases, in which there are different types of goods or several parties, for example). One could also compare this with an interrupted game of chance in which the stakes are evenly distributed among the players.[624]

The traditional metaphor of a pair of scales could be used to illustrate these kinds of deliberation: in the former case the weight in the left or right pan decides the case for one or the other.[625] If the weight in the left pan is heavier than that in the right, the option represented by the left one is chosen. The deliberator collects reasons or evidence on both sides, and the weightier alternative wins. In the latter case a compromise may be established by making an agreement covering the distribution of the goods. It is in this kind of situation that a balance is sought.

The first kind of balancing is common in proceedings of criminal law, where the decision settles whether the accused is guilty or not guilty. As described in Chapter 6.2.2.1., the judge accepts or rejects proof for or against the guilt of the accused and evaluates it. By combining the evidence he may reach a conclusion.

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[624] Compare the example discussed in Chapter 6.2.1. in connection with Leibniz's memoir *De incerti aestimatione*.

[625] This metaphor occurs in Homer's *Iliad*, book VII. For a discussion of the metaphor in Leibniz, see Dascal, *The Balance of Reason*.

In his discussion of this simple balancing of reasons Leibniz often used the method of presumption.

In moral deliberations the agent forms different estimations of the proposed actions and balances them against each other (in several stages, if necessary). These estimations also include consideration of the consequences of the proposed actions as one aspect, or a weight in the left or the right pan of a pair of scales. Thus among the reasons to be added to either side are the goodness of the proposed act and its estimated probability of causing favourable consequences. It could happen that an action that is better good than another is ignored because the lesser good is estimated to have a higher degree of probability of success. Thus the balancing concerns the overall goodness of the proposed actions.

> "Since the final result of the balance is determined by how things weigh against one another, I should think it could happen that the most pressing disquiet did not prevail; for even if it prevailed over each of the contrary endeavours taken singly, it may be outweighed by all of them taken together…everything that then impinges on us weighs in the balance and contributes to determining a resultant direction, almost as in mechanics..."[626]

If the reasoning or evidence clearly favours one side a presumption is formed, which holds unless significant proof to the contrary is encountered.[627] The presumption works as a sufficient reason for determining the balance between reasons. The determination happens pseudo-mechanically in the sense that, while the balancing happens "automatically", one can affect the

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[626] "Comme la resultat de la balance fait la determination finale, je croirois qu'il peut arriver que la plus pressante des inquietudes ne prevaille point; car quand elle prevaudroit à chacune des tendences opposées prise à part il se peut que les autres jointes ensamble la surmontent…tout ce qui frappe alors, pese sur la balance, et contribue à former une direction composee presque comme dans la mecanique…" (*Nouveaux essais* II, xxi, §40). A VI, 6, p. 193; RB, p. 193.

[627] "…puis il y a presomtions, qui passent pour preuves entières provisionnellement, c'est à dire, tandis que le contraire n'est point prouvé" (*Nouveaux essais*, IV, xvi, §9) A VI, 6, p. 464.

"weights" or reasons by developing one's understanding in ways described earlier.

The second kind of balancing is an attempt to distribute the goods in a way that is agreeable to all parties. Some good is given to one party, which makes a concession to another, and the same goes for the other parties. A rational balance through negotiation can be achieved, as each party makes some concessions but gains some other goods. This kind of rational compromise is typical in peace negotiations and economic or political agreements.

As in the case of the simple balance, the probability of the desired consequences of the agreement should be considered in the reasoning. The overall result of the compromise should be favourable in terms of general well-being, and should promote overall perfection as far as possible. Thus the compromise in itself could be seen as a moral act. For this reason it might become necessary to persuade the parties to settle for less than the full amount of the good, since a compromise that is less profitable to different parties might have better consequences for the long-term good – in the promotion of peace, for example. Thus it might be rational to leave some controversial issue unresolved, or to leave some disputed area to a neutral sovereign.

Both kinds of balancing (for-against & compromise) require the careful selection of evidence, and one should take every credible reason into account, as Leibniz explained in his economics metaphor of accounting:

> "…many things are needed for a right decision to be made in a case in which reasons have to be weighed against one another. This is almost how it is with merchants' account books. For in those one must not ignore any sum, each separate sum must be carefully ascertained, and must be put in good order and then listed accurately. Nevertheless, some items are omitted, either because they escape the mind or because one passes too quickly over them. And some are not given their correct values – as in the case of the book-keeper who carefully adds up the columns on each page, but incorrectly computes the

> individual amounts of each line or entry before extending them to the column…"[628]

One should carefully select the appropriate components and add them up on one side or the other, without forgetting the probable consequences of the proposed actions. The reasons act as weights, and the side that has the more significant reasons wins. One could also strive at a compromise and distribute the reasons on both sides. Rash decisions should be avoided in the interests of proper deliberation:

> "…after long pro and con discussions, most of the time it is emotion rather than reason that claims the victory, and the struggle ends there with the Gordian knot cut rather than untied. This is especially pertinent to the deliberations of practical life in which some decision must eventually be made. Here it is only rarely the case that advantages and disadvantages, which are so often distributed in many different ways on both sides, are weights as on a balance."[629]

Thus reasons may be estimations or demonstrated proof. Depending on their nature, the weighing may be of "soft" or "hard" reasoning. In practical cases the evaluation (especially of

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[628] "…il faut bien de choses pour se prendre comme il faut, lorsqu'il s'agit de la balance des raisons; et c'est à peu près comme dans les livres de compte des Marchands. Car il n'y faut negliger aucune somme, il faut bien estimer chaque somme à part, il faut les bien arranger, et il faut enfin en faire une collection exacte. Mais on y neglige plusieurs chefs, soit en ne s'avisant pas d'y penser, soit en passant legerement là-dessus. Et on ne donne point à chacun sa juste valeur, semblable à ce teneur de livres de compte qui avoit soin de bien calculer les colonnes de chaque page, mais qui calculoit très mal les sommes particulieres de chaque ligne ou poste avant que de les mettre dans la colonne… " (*Nouveaux essais* II, xxi, §67) A VI, 6, pp. 206-207; RB, pp. 206-207.

[629]"Itaque post multam agitationem plerumque affectus potius quam rationes vincunt, et controversias rupto potius nodo gordio quam soluto terminamus. Hoc imprimis fit in deliberationibus ad vitam pertinentibus, ubi aliquid statuendum sane est; sed commoda atque incommoda (quae saepe utrinque multa sunt) velut in bilance examinare paucis datum est." (*De numeris characteristicis ad linguam universalem constituendam*) A VI, 4, p. 268; Leibniz, *Selections*, p. 23.

the consequences) is usually based on "soft" rationality. As soon as Leibniz had finalised the universal science and the probability calculus he envisioned he replaced these estimations with calculations, thus enabling rigorous reasoning. As noted, this was possible in cases in which exact good could be calculated. He returned to his economics theme in his memoir *De numeris characteristicis ad linguam universalem constituendam*:

> "There is hardly anyone who could work out the entire table of pros and cons in any deliberation, that is, who could not only enumerate the expedient and inexpedient aspects but also weigh them rightly. Thus two disputants seem to me almost like two merchants who are in debt to each other for various items, but who are never willing to strike a balance; instead, each one advances his own various claims against the other, exaggerating the truth and magnitude of certain particular items. Their quarrel will never end on this basis. And we need not be surprised that this is what has happened until now in most controversies in which the matter is not clear, in other words, not reduced to numbers. Now, however, our characteristic will reduce the whole to numbers, so that reasons can also be weighed, as if by a kind of statics. For probabilities, too, will be treated in this calculation and demonstration, since one can always estimate which of the given circumstances will more probably occur."[630]

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[630] "Qui vero in aliqua deliberatione totam utrinque Tabulam accepti et expensi subducere id est commoda et incommoda non tantum numerare sed et recte ponderare possit vix quisquam est. Itaque duo qui disputant fere mihi duobus Mercatoribus similes videntur qui sibi mutuo ex multis capitibus debitores essent, sed nollent unquam ad generalis cujusdam bilancis examen venire, interea varie merita quisque sua erga alterum, et quorundam singularium nominum (seu debitorum) veritatem ac magnitudinem exaggerarent, hi certe sic quidem nunquam litem terminabunt. Idque hactenus fieri in plerisque controversiis, ubi res liquida (id est ad numeros revocata) non est; mirari non debemus. Nunc vero characteristica nostra cuncta ad numeros revocabit, et ut ponderari etiam rationes queant velut quoddam staticae genus dabit. Nam etiam probabilitates calculo aut demonstrationi subjiciuntur; cum aestimari semper possit quodnam ex datis circumstantiis probabilius sit futurum." A VI, 4, p. 269; L, pp. 224-225.

Calculating reasons or, to use Leibniz's word *Calculemus!* is thus a kind of weighing up of reasons, but with exact weights, produced by analysis or probability calculus. Sometimes (in economic treaties, for example) one could simply calculate the share of each party once the analysis has been completed successfully, in other words once the reasons or arguments have been reduced to numbers.[631]

11. 2. 1. An Example of Balancing For or Against

As mentioned, the model of the pair of scales is often related to criminal jurisprudence, when the decision is for or against some position. Some legal case studies that seem to apply the model were discussed in Chapter 6.2.2. I will now consider a significantly trickier example in which the balancing takes place in several stages. It concerns Leibniz's dissertation for Altdorf University, which he wrote in 1666, *Specimen difficultatis in jure seu dissertatio de casibus perplexi*. He discussed more difficult cases involving problems of logic in applying the law. He believed that all cases should be settled by juridical means through only justice and should not involve any external authority.[632]

This presupposes that the legal system is normatively rich enough to settle all questions that might arise, or that it enables (supplemented by a set of principles) the judge to resolve all difficulties.[633] Difficult or perplexing cases were discussed by medieval thinkers as important moral problems because they represented a situation in which a person was trapped between

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[631] In modern view, this view is certainly too simple. There are other factors involved that can affect the overall balance, such as the consequences of treaties (moral, political, economic and ecological) and psychological questions. These additional reasons complicate the deliberation significantly and it is questionable if even the probabilities of the consequences of these factors can be estimated. However, Leibniz evidently believed that all relevant factors in a controversy can in an ideal case be reduced to numbers.

[632] Sec. VI, A VI, 1, p. 237.

[633] See Ben-Menahem, *Leibniz on Hard Cases*, p. 199.

two equally sinful alternatives.[634] Leibniz used the term to include all complex cases, and sought to provide a systematic method for resolving them.

He defined perplexing cases in the first five sections of the dissertation, and provides a host of well-known examples and references to past and contemporary authorities. In the fifth section he made a distinction between antinomies and perplexing cases: while the former involve contradictory elements, the latter include contradictory norms only when applied to a certain case. It is possible, therefore, to reach a verdict by deciding which norm is to be applied.[635] Thus these cases are legally well-grounded, and when properly judged they could be decided rationally. The perplexing case is, in the end, not perplexing at all.

Sections six to ten described different ways of resolving law cases, such as free judgement, leaving the case unsolved and casting lots, and includes examples of the use of these methods.[636] Section ten includes a discussion on the method of charity, according to which the judge is led by principles of utility, charity, equity and humanity, and Leibniz seemed to be hinting at the possibility of compromise, thus referring to cases in which the proofs are equally weighty.[637] However, compromise is not good enough in cases in which there is only one beneficiary: one has to judge for or against some position.

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[634] The term perplexing case derives from Gregory the Great. Leibniz's discussion, however, did not include this kind of moral valuation. Ben-Menahem, *Leibniz on Hard Cases*, p. 200.

[635] "Casum igitur (propriè) perplexum definio (eum, qui realiter in jure dubius est ob) copulationem contingentem plurium in facto eum effectum juris habentium, qui nunc mutuo concursu impeditur. In antinomia autem ipsarum immediatè legum pugna est, quanquam et perplexitas antinomia quaedam indirecta dici potest." A VI, 1, p. 236. See also Bayart, *Leibniz et les antinomies en droit*, pp. 257-58 and Ben-Menahem, *Leibniz on Hard Cases*, p. 201.

[636] Sec. 6, A VI, 1, p. 237.

[637] See A VI, 1, p. 239 and Ben-Menahem, *Leibniz on Hard Cases*, p. 202. Bayart notes that complex perplexing law cases, while common in Roman justice, are less common in modern jurisprudence. Bayart, *Leibniz et les antinomies de droit*, p. 260.

He concentrated on conflicts involving cases with at least three claimants, all of whom, at first sight, have a legal right, and the sole issue is the priority of their claims. The conflict of priority arises from conflicting norms of the same or a different origin, and the solution is reached by taking one norm to be superior to the others.[638] If the norms are of the same status it is the kind of perplexing case Leibniz found interesting, whereas if they are of different status it is not perplexing at all. He believed in always applying a specific rather than a general norm to the case.[639]

Before introducing his own method Leibniz distinguished between *dispositio* and *concursus* in a perplexing case. *Dispositio* involves the claimant presenting a claim that is so confused, or is like a vicious circle, so that two different verdicts are possible, whereas *concursus* means there are several consistent claims at the same time.[640]

He then proceeded to give three rules for solving perplexing cases. The first one, in section XII, concerns *dispositio*: "A Perplexing *dispositio* is invalid, and who founds his case on it, obtains nothing."[641] The second one is as follows: "If the object of a perplexing conflict is indivisible, it cannot be divided among all related to the case."[642] Thus each person wins (and loses) and the case ends in a tie, which is unacceptable. There cannot be equilibrium of reasons, since it would make practical arrangements impossible. Thirdly, "In perplexing conflicts over indivisible things all parties admit their relative defeat or victory."[643] All parties should obey reason – in this case, the judge.

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638 Ben-Menahem, *Leibniz on Hard Cases*, p. 204.

639 Section XX, A VI, 1, p. 244.

640 See Sec. XII, A VI, 1, p. 240.

641 "Dispositio perplexa invalida est, et qui se super ea fundat, nil obtinet." Sec. 12, A VI, 1, p. 240.

642 "In concursu perplexo ad rem indivisibilem, et incommunicabilem concurrentes omnes carebunt." Sec XXIV, A VI, 1, p. 247.

643 "In concursu perplexo ad rem indivisibilem aut communicabilem litigantes omnes admittentur pro rata." Sec. XXVII, A VI, 1, p. 249. The term "pro rata" has a specific meaning in jurisprudence. When several debtors are each liable for the whole debt they are said to be liable "in

The task of the judge, in turn, is to interpret the will of the legislator, of which the written law is an imperfect model.[644] The need is therefore to understand the spirit, not the letter of law. It is not quite certain whether Leibniz thought these three rules were sufficient for solving every possible perplexing case, but that seems very likely.

How should the decision be reached? True to his idea of sufficient reason, Leibniz recommended finding by logical analysis a reason why one jurisprudical norm was more valid than the others in the case and thus to be favoured. This would do away with the perplexity. The perplexing case is, after all, a conflict of norms, or a conflict of logic within the legal system. However, it is not always possible to find a sufficient reason, and in that case the judge should try to eliminate the norms one by one and decide which one is to be preferred.[645] He should weigh up the different ones in a dialectical manner and decide which is the most appropriate in the case at hand and best reflects the spirit of the lawmaker (which, of course, includes the idea that a legal norm should promote general perfection). Depending on the norm, any claimant could be given priority.

These perplexing cases are common in hereditary matters, in which different rules of inheritance conflict with each other. Another example would be a case in which a prince has given contradictory promises concerning a vacant position or when a property is subject to different kinds of mortgage.[646]

11. 2. 2. Examples of Compromises Achieved by Finding a Balance

Leibniz was active in almost every imaginable practical field simultaneously, and tried to reconcile different opinions in science, philosophy, politics and theology and so forth by seeking the common ground between opponents and understanding their

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solidum", but where each is liable only for his own share or proportion only, they are said to be bound "pro rata."

[644] Bayart, *Leibniz et les antinomies en droit*, p. 261.

[645] Sections XIX-XXI, A VI, 1, pp. 243-44.

[646] Ben-Menahem, *Leibniz on Hard Cases*, p. 205

different positions. Although he thought that rigorous analysis and, ultimately general science, complemented by a calculus of probability (once finalised) would eventually be the best way to resolve controversies, he was also keen to find other, less demanding methods that would be applicable in practical situations.

In settling controversies rational argument often suffices for finding a middle ground or a reasonable distribution of goods that would be acceptable to all parties. By weighing up the different reasons in both pans of the pair of scales it is possible to see the whole situation and thus to find a compromise allowing both parties to agree on a common solution that would promote not only the interest, but also the common interest. When the values are independent of each other, simple balancing might suffice in reaching a rational compromise.

Compromise achieved by means of balanced reasoning is typical in political controversies. In *Realpolitik* it is reasonable for both sides to make concessions in order to reach a solution that enables both parties to gain in some respects and to lose in others. Leibniz often strived for this kind of rational compromise in his various political activities. Let us consider two examples, one from Church politics and the other from 18th-century politics.

My first example concerns an effort to find a compromise between the confessions, which Leibniz gave in his memoir *Pour faciliter la réunion des Protestants avec les Romains catholiques* (1698, written under the name of Molanus).[647] He began by declaring that the possibility of reunion is dependent on the question of heresy[648] – the Protestants were not formally heretical because the status had been cast upon them without consultation in the Council of Trent. They were only materially heretic (a less serious case), and this should be admitted by the Catholics.

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[647] FC II, p. 172f. There are two drafts of this memoir, one in Latin and the other in French, and a copy in Leibniz's own hand (LH 1 7, 4 2-6), which is assumed to be the source of the one printed in FC. Thus it seems clear that the text was written by Leibniz. I thank Prof. Hartmut Rudolph from Leibniz-Arbeitsstelle Potsdam for this information.

[648] FC II, p. 174.

Leibniz then suggested six concessions to be made by the Catholics:[649]

1) Protestants may return permanently to the Roman Church.
2) Catholics must not force Protestants to hold Catholic masses or to use a language that is not familiar to people in their churches. Further, they should not force them to introduce rites that would cause alarm or inconvenience.
3) Protestant priests and other ecclesiastics should be allowed to marry, since this was already an established practice.
4) Protestant ecclesiastics should not be held in contempt, and the priests should also be allowed to practice their profession among Catholics – this would cause no scandals if the sacraments and rules of the Catholics were honoured.
5) All the land and property of Protestants ecclesiastics taken over under the Peace of Westphalia and in other transactions should be returned.
6) Once these concessions have been accepted, all excommunications and anathemas on both sides should be revoked at once. A declaration should be issued stating that Protestants are no longer heretics or schismatics.

Final settlement of theological controversies would be reached in an ecumenical council in the future. Leibniz was certain that the Pope could accept these terms.[650] However, since the proposition was a compromise, the Protestants should also make some concessions and agree to the following five conditions:[651]

1) Protestants should accept that the Bishop of Rome is the highest authority in the whole Christian world and the supreme patriarch in spiritual matters. They must also obey the canon law in spiritual matters.

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[649] Ibid., pp. 176-77.
[650] "...il n'y a rien dans ces points qui soit contraire au droict divin et que le Pape ne puisse permettre..." Ibid., p. 178.
[651] Ibid., pp. 179-80.

2) Protestant priests are subject to their bishops, the bishops to their Archbishops and so forth, according to the Catholic hierarchy.
3) Protestants should recognise their fellow Catholics as brothers in Jesus Christ, cultivate unity with them, and practice charity towards them. The Church should resolve any controversies between the two sides.
4) Following the reunion, Protestants should agree not only to maintain the peace and unity, but also to perfect it by all possible means.
5) Protestant priests should enter into solid and peaceful discussion in which the controversies and disagreements in the two doctrines are analysed, and which would establish the core of the Christian faith for posterity. An ecumenical council should settle any resolved matters.

Leibniz maintained that the majority of controversies were pseudo-problems because of the manner in which they were presented, and that careful analysis often showed that the differences were not real or that they could be left to be settled later, when the solution would be more apparent. [652] Thus his method here is similar to the notion of transubstantiation (which I will discuss in detail in Chapter 11.3.2.3.): one should assume some understanding, which is provisional until it can be analysed and settled properly. This presumption is evident in the procedure for the reunion which comprises three stages.

At the first stage the question of the mass and the Eucharist will be almost resolved and the differences will only be verbal.[653] The controversy over the number of sacraments will also be reduced to the verbal level. Protestants will allow Catholic masses and Catholics will allow Protestant sermons, as long as there is no abuse of the saints and no vernacular language. The question of the Eucharist will be discussed in a spirit of tolerance.[654]

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[652] Ibid., p. 184.
[653] I will discuss the details later.
[654] Ibid., pp. 184-85. This phrasing is familiar from Leibniz's writings about transsubstantion, and simply means that theologians from both parties would soon find out that the difference in dogma were only verbal.

Certain Catholic sacraments (the sacred oil, for example) will be introduced to the Protestants in the second stage. Confirmation will be preserved in Protestant ceremonies, and also introduced to the Catholics, and the sacrament of marriage will be unified throughout Christendom. Catholics will not be required to believe that the mass is an act that effaces current evil in the same way that the crucifixion is believed to redeem original sin.[655]

At the start of the third stage, "There are no controversies about whether good deeds will affect justification or the forgiveness of evil things."[656] Disputes over good deeds and their role in one's "heavenly credit" will be merely scholastic, as will all former differences. At this last stage of the reunion the controversies will have become merely verbal, to be resolved through continuous discussions among the leading theologians on both sides. The problems are thus no longer real, only verbal.[657]

Although it is evident that this memoir was written from the Protestant perspective, its author seemed to be aiming at compromise, with each party expected to give up some of their privileges and to genuinely strive for reconciliation. Leibniz considered the problem political, as this memoir clearly shows. The unification of the confessions would promote general well-being by helping to maintain peace in an era in which the majority of wars were related to a greater or lesser extent to religious differences. Doctrines such as transubstantiation were to be understood in principle, and the exact interpretation of the dogma could be settled later in negotiations between theologians on both sides or in an ecumenical council.

The first priority was to deal with practical problems. According to Leibniz's presentation, the burning issues were the authority of the Catholic Church and the Pope on the other hand and on the other the practices of the Protestants. These criteria had to be balanced so as to achieve a compromise according to which the Catholics would accept Protestants in the Roman church as

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[655] Ibid., pp. 186-88.

[656] "...il n'y a plus de controverse si les bonnes oeuvres méritent la justification ou la rémission des péchés." Ibid., p. 189.

[657] Ibid., pp. 189-90.

they were, that is to say with their established ways and habits, and would recognise their right to practise their kind of Christian religion. The Protestants, in turn, would recognise the supreme authority of the Roman church.

This scheme was ingenious, but it is easy to agree with Miller and Spielman, who argue that although Leibniz could not be accused of being completely politically motivated, it is clear that he did not place proper emphasis on the real need to establish harmony among theologians and the great body of the faithful before any schism or heresy could rightly be said to have ended.[658]

Another example of finding a balance between different parties occurs in Leibniz's memoir *Considerations sur le moyens de faire une paix juste et raisonnable*, which he crafted in 1694-95 in order to assist the Duke of Hanover, Ernst August, in promoting peace between France and the Allies in the so-called Pfalz war (1688-97).[659] His approach to this political problem was strikingly similar to his approach in *Pour faciliter la réunion des Protestants avec les Romains catholiques,* discussed above.

In 1688 the armies of Louis XIV marched to Pfalz on some dubious grounds and the area was mercilessly robbed and devastated. The Pfalz war was a continuation of the Reunion politics of Louis XIV, and started in 1686.[660] France suffered setbacks when the Emperor Leopold I won a decisive victory against the Turks and William III of Orange became the King of England. A new alliance ("The Grand Alliance") against France was formed in 1689 with William III in the lead, consisting of England, the Netherlands, the Emperor Leopold I, Sweden, Spain, Savoy, and several German states. France was left alone in the Great War against the rest of Europe.

At first Louis was successful and there was a plan to invade England, but a decisive defeat in a sea battle at The Hague gave the

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[658] Miller & Spielman, *Rojas y Spinola*, p. 66.

[659] Leibniz's memoir is to be found in A IV, 5. The Pfalz war is also known as The War of the Grand Alliance, The War of the League of Augsburg and the War of the English Succession.

[660] For the historical details of the Pfalz war, see Lavisse, *Louis XIV. Histoire d'un grand règne 1643-1715*, p. 750f.

allied forces predominance at sea. The French troops were more victorious on land and the battles raged on for almost ten years, with grave losses. Finally the huge costs, famine in France and general war-weariness forced the parties to engage in peace negotiations. The negotiations were not solely about military achievements – since neither side had had a decisive victory – and a major factor concerned the resources of the Allies and France. The peace treaty was finally signed in Rijswick in 1697.

Under the treaty Louis XIV was forced to return all his conquered territory east of the Rhine all Reunions except Alsace and Luxembourg, and to renounce all claims to Pfalz and the Bishopric of Cologne. Thus France had to retreat to her natural, geometric borders as defined by the Treaty of Nijmegen (1679). In addition, Louis had to return Lothringen to its Duke, while Strassbourg was left to France, and he had to promise not to try to unseat William III from the throne of England. Thus the treaty was a compromise: France was forced to withdraw from its conquered lands, but it was not defeated. Four years later another war, related to the Spanish succession, broke out.

Leibniz's memoir was written in a situation in which the solution was in sight, but no agreement between the parties had been achieved. True to his convictions, he wrote: "It is very difficult to find the means to make a good peace, but perhaps it is not yet absolutely impossible. Extremes must be avoided, if possible."[661] He suggested that a neutral prince might act as a negotiator. [662] His memoir was a manual of a kind for the neutral prince.

In the negotiations the foundation for peace was to be found in a compromise that safeguarded the security of the allies and the honour of Louis XIV:

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[661] "Il est tres difficile de trouver les moyens de faire une bonne paix, mais peutestre ne l'est-il pas encor absolument impossible. Il faut prevenir les extremités, s'il se peut." A IV, 5, p. 446.

[662] A IV, 5, p. 447. Leibniz was probably thinking of Sweden. Ibid., p. 445. In the actual treaty of Ryswick Sweden acted as a mediator, but failed in the task.

> "The conditions of a just and reasonable peace…can be reduced to two essential points…: the security of the Allies must be guaranteed and the honour of the King of France protected. This is what justice requires for the Allies and the reason demands for the King so that he may stay as wonderful as he is."[663]

The security of the allies was demanded by justice (here Leibniz was probably referring to Louis' politics concerning Germany), and the honour of the king of France was to be preserved according to the demands of reason. Later Leibniz argued that it was not wise to demand too much from France, since that would surely lead to even more bloodshed.[664] By setting these two reasons or goods against each other and applying the pair of scales model the negotiator could strive for a rational compromise between the two parties.

The politics of the 17th century concerned appearances, perhaps even more than today. As long as both parties had their immediate concerns satisfied, a durable peace was possible and the prerequisites for pursuing perfection could be established. Leibniz argued that the Allies could best ensure their security by permitting the King of France to preserve his honour, since otherwise there would be no peace and the final rupture in international relations would take place. It was through such a compromise that long-term peace in Europe could be established.[665]

> "Here is thus the nub of the matter, and if the secret of connecting these two things, which appear so opposed, the security of one party and the honour of other, is found, one could give Europe the great

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[663] "Les Conditions d'une paix juste et raisonnable…se doivent reduire à deux points essentiels…; sçavoir qu'on rendre la seureté aux Alliés, et qu'on mette à couvert l'honneur du Roy de France. C'est ce que la justice demande pour les Alliés, et que la raison demande pour le Roy T. C. tant qu'il demeure formidable qu'il est." A IV, 5, p. 447.

[664] "…il faut que la raison regle des demandes." A IV, 5, p. 448.

[665] See A IV, 5, p. 449.

> goodness of durable peace and thereby prevent the terrible evils that still menace Christendom."[666]

The resulting peace in Rijswick was a compromise that approximately followed Leibniz's suggested guidelines. However, the reasons for this compromise were more to do with the military situation and the available resources of the different parties than any abstract ideal in Leibniz's memoir. It seemingly had no effect in the actual peace negotiations.

11. 3. Complicated Decisions

Simple balancing between two alternatives on a pair of scales is often too limited a model to cope with difficult decisions. In the Leibnizian sense (he also used the terms *trutina*, *stateram* and *libra*)[667] there are many cases involving multiple indivisible goods and the simple weighing between different alternatives does not suffice. One has to strive for the optimum, taking account of all the goods in the final decision.

Finding an optimal solution is very difficult. It is rare for humans given their limited cognitive ability and reasoning, but they can strive to find a solution that approaches the optimum as closely as possible. God's choice of the best among all possible worlds is an idealised version of this kind of choice since His infinite cognition makes it possible to find the objective optimum among the alternatives.

In the context of deliberation, finding the optimum is related both to the assessment of the good and the estimation of the probability of the desired effect on the desired good of the proposed action. In what follows I will primarily concentrate on the first consideration, as the latter was discussed in Chapter 6.

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[666] "Voilà donc le noeud de l'Affaire, et si l'on trouvoit le secret d'allier ces deux choses, qui paroissent si opposées, le seureté d'un parti, et l'honneur de l'autre, on pourroit donner à l'Europe ce grand bien d'un paix durable, par la quelle on previendroit des terribles maux qui menacent encor la Chrestienté." A IV, 5, p. 449.

[667] Marras, *Leibniz and his Metaphorical Models: the "trutina rationis"*, p. 781

11. 3. 1. The Vectorial Model of Rational Decision-Making

I discussed optimisation and the calculus of variations in Chapter 2.1.1. I argued, following Nicholas Rescher's interpretation, that according to Leibniz, God's preferred method of choosing the best of all possible worlds was the calculus of variations where the object is to find a unique (easiest, optimal) solution among an infinite number of alternative paths that achieves an extremisation (maximisation or minimisation) of some specified characteristic (time or distance, for example). The optimal and unique combination of minima (order) or maxima (variety) (where these factors lead in opposite directions) is simply the best of all possible worlds.

An instance of the general optimisation model is Leibniz's vectorial model of rational decision-making which he developed in order to grapple with difficult practical human decisions. The model was briefly mentioned by Louis Couturat in his *La logique de Leibniz*, for example and is discussed by Jon Elster in his *Leibniz et la formation de l'esprit capitaliste*.[668] Jaakko Hintikka attached more importance to it in his article "Was Leibniz's Deity an Akrates?", in which he argues that Leibniz developed it in order to ease difficulties in making rational decisions, and it was thus of systematic value. Simo Knuuttila considers the model, which he calls the vectorial theory of rational decision Leibniz's most original contribution to practical rationality.[669] The details have remained obscure, however, since Leibniz seldom discussed it explicitly. My aim in what follows is to provide a hypothetical reconstruction of it and to find some examples in which Leibniz seemed to apply it.

The complicated balance in the vectorial model is significantly different from the more simple weighing up of options on a pair of scales, as shown in *Essais de Theodicée*, §324. First, Leibniz

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[668] See Couturat, *La logique de Leibniz*, p. 562-65 and Elster, *Leibniz et la formation de l'esprit capitaliste*, p. 123-24.

[669] See Hintikka, *Was Leibniz's Deity an Akrates*, pp. 98-100 and Knuuttila, *Old and New in Leibniz's View of Rational Decision*, p. 333.

introduced the traditional pair of scales model as Bayle's view of the soul:

> "He demonstrates amply enough…that the soul may be compared to a balance, where reasons and inclinations take the place of weights. Accordingly, one can explain what passes in our resolutions by the hypothesis that the will of a man is like a balance that is at rest when the weights in its two pans are equal, and which always inclines either to one side or the other according to which of the pans is the more heavily laden. A new reason makes a heavier weight, a new idea shines more brightly than the old; the fear of a heavy penalty prevails over some pleasure; when two passions dispute the ground, it is always the stronger that gains the mastery, unless the other be assisted by reason or by some other contributing passion."[670]

He then goes on to introduce his new model:

> "Nevertheless, as very often there are diverse courses to choose from, one might, instead of the balance, compare the soul with a force that puts forth an effort on various sides simultaneously, but which acts only at the spot where action is easiest or there is least resistance."[671]

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[670] "Il fait voir assés amplement…qu'on peut comparer l'ame à une balance, où les raisons et les inclinations tiennent lieu de poids. Et selon luy, on peut expliquer ce qui se passe dans nos resolutions, par l'hypothese que la volonté de l'homme est comme une balance qui se tient en repos, quand les poids de ses deux bassins sont egaux, et qui panche tousjours, ou d'un côté ou de l'autre, selon que l'un des bassins est plus chargé. Une nouvelle raison fait un poids superieur, une nouvelle idée rayonne plus vivement que la vieille, la crainte d'une grosse peine l'emporte sur quelque plaisir; quand deux passions se disputent le terrain, c'est tousjours la plus forte qui demeure la maitresse, à moins que l'autre ne soit aidée par la raison, ou par quelque autre passion combinée." G VI, p. 308; H, 321-322.

[671] "Cependant, comme bien souvent il y a plusieurs partis à prendre, on pourrait au lieu de la balance comparer l'ame avec une force, qui fait effort en même temps de plusieurs côtés, mais qui n'agit que là où elle trouve le plus de facilité ou le moins de resistance." (*Essais de Theodicée*, §325). G VI, p. 309; H, p. 322. A similar passage can be found in a short fragment called *Demonstratio quod Deus omnia possibilia intelligit*: "Sit liquor pressus et qui exire conatur. Manifestum est tentari semper ab eo vias possibiles omnes,

The reference to the easiest action is clearly related to the optimisation method discussed in *Tentamen anagogium*. In the process of deliberation, different inclinations act as tendencies, forming different paths or variations in different directions. The best choice is the unique optimal path. In cases of moral choice, the final decision is, in an ideal situation, the optimum between different goods ("effort on various sides simultaneously"), and it is reached when all of these inclinations are apperceived and the optimal solution is found ("action is easiest or there is least resistance"). As in the example of the ray of light (discussed in Chapter 2.4.2.) there is always a single best decision, which may be reached if the deliberator is enlightened enough and can expect to find this optimum. As mentioned, the best decision follows God's will, and produces the maximum amount of common good to the perfection in the world.

While God chooses the best of all possible worlds in his infinite understanding, humans act on the basis of appearances they perceive. The more developed our understanding is, the more informed we are of the real good involved in each case, and the more adequately we can contribute to the general perfection, which is ruled according to architectonic considerations:

> "As for the rational soul, or mind, there is something more in it than in monads, or even in simple souls. It is not only a mirror of the universe of created things, bur also an image of the divinity. The mind not only has a perception of God's works, but it is even capable of producing something that resembles them, although on a small scale…Our soul is also architectonic in its voluntary actions; and in discovering the sciences according to which God has regulated things (by weight,

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successum autem haberi tantum secundum viam omnium possibilium facillimam. Tentari autem omnes ex eo patet, quia ut quaeque oblata est commodior eam statim arripit: nec vero eligere posset commodissimam nisi eodem momento omnes tentarentur, neque enim determinatur commodissima nisi comparatione omnium." A VI, 4, p. 1353; Leibniz, *Confessio philosophi*, p. 141.

> measure, number, etc.) it imitates in its realm and in the small world in which it is allowed to work, what God does in His large work."[672]

God can see perfectly that the basis for His choice of the best world lies in the optimum between the criteria of order and variety, as I argued in Chapter 2. It is much more difficult for humans to know about the motives for our actions, and we can also easily err in the choice of the appropriate ways of evaluating the good and of the consequences of our proposed actions.

Minute perceptions blur the judgement in human deliberations, and we may be affected by sensual pleasures we mistakenly regard as real goods, or we may even ignore the real goods and choose the apparent ones. However, by manipulating our judgement, by adopting good habits and developing our understanding, we can approach the optimal decision in complicated deliberations, and sometimes perhaps even reach it. We should strive to find the best possible combination of different inclinations to the good within the limits of our cognitive abilities, or at least choose the combination that is least harmful with regard to our own good and the general well-being. The more developed our understanding of the world and God's nature is, the better rational decisions we will make.

In itself, the vectorial model is only a heuristic device that cannot give any certain results. However, by applying it the moral agent can map the situation, make discoveries and, in an ideal case, find the optimum from among carefully selected different inclinations all of which lead to the good. Whether or not we can

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[672] "Pour ce qui est de l'Ame raisonnable ou de l'Esprit, il y a quelque chose de plus, que dans les Monades, ou même dans les simples Ames. Il n'est pas seulement un Miroir de l'univers des Creatures, mais encore une image de la Divinité. L'Esprit n'a pas seulement une perception des ouvrages de Dieu, mais il est même capable de produire quelque chose qui leur ressemble, queoy'en petit…Notre ame est Architectonique encore dans les Actions volontaires: et decouvrant les sciences, suivant lesquelles Dieu a reglé des choses (pondere, mensura, numero, etc.). Elle imite dans son departement, et dans son petit Monde où il luy est permis de s'exerceser, ce que Dieu fait dans le grand." (PNG, §14) G VI, pp. 604-05; AG, p. 212.

reach the optimum, the deliberation is a pseudo-mechanical arithmetics of reasons, which consists of inclinations which do not necessitate. In the pair of scales model the deliberator adds up the reasons in the left and right pans and balances between them, while the vectorial model involves the "multiplication" of the separate continuous values in order to find a balanced optimum.

> "I came to see that there is a species of mathematics in estimating reasons, where they sometimes have to be added, sometimes multiplied together in order to get the sum. This has not yet been noted by the logicians."[673]

The final deliberation proceeds in two stages. First, the deliberator assesses the good in the situation and, having found some appropriate conception, considers the probability of the proposed actions with respect to it by using the moral calculus described above. The optimal choice is, of course, the best choice in every respect. Since this optimum is seldom reached, one should strive at as good an assessment in both respects as possible. If the assessment is successful, the choice contributes to the increase in perfection in the world, which gives the deliberator pleasure and motivates him or her to act accordingly in subsequent deliberations.

Leibniz's views on deliberation in complicated situations incorporate some new ideas. He took an interest in cases involving plural values, all of which would affect the decision. He was looking for optima in situations in which there were no compatible

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[673] "Je fis voir qu'il y a une espece de Mathematique dans l'estime des raisons, et tantost il faut les ajouter, tantost les multiplier ensemble pour en avoir la somme. Ce qui n'a pas esté remarqué des Logiciens." (Leibniz to Burnett 1/11. 2. 1697) G III, p. 190. In what follows, Leibniz noted that he had made efforts in applying mathematics to theology. Recently Michael J. Murray referred to willing as a "result of a "vector sum" of desires for those things that are apprehended as good, whether by way of adequate or inadequate ideas." Murray, *Spontainety and Freedom*, p. 205. This characterisation relates all inclinations to addition, which I find misleading. In my view, addition is exclusively related to the pair of scales model, in which different reasons are added up and weighed against each other.

goals. In his view, one deliberates between different goods that promote universal perfection more or less efficiently, and not between the means of reaching one specific good, which is the common case in Aristotelian practical syllogism. Nevertheless, Leibniz could be seen as a follower of Aristotle in the sense that his idea of universal perfection apparently sprung from Aristotelian *eudaimonia*.[674]

A significant feature of the vectorial model is that it can be expressed in a geometrical manner: the deliberator uses figures in order to sketch or map the situation better. In this Leibniz was influenced by Arnauld and Nicole's *The Art of Thinking* (*L'art de penser*), or the so-called Port Royal Logic. The authors argue in their discussion of lotteries in the last chapter of this work that one should not only think about the good, but should also take into account the probability that it will materialise:

> "...in order to decide what we ought to do to obtain some good or avoid some harm, it is necessary to consider not only the good or harm in itself, but also the probability that it will or will not occur, and to view geometrically the proportion all these things have when taken together."[675]

This description clearly refers to the moral calculus as sketched by Rescher (discussed in Chapter 11.1.). In *Nouveaux essais*, however, Leibniz generalised the idea to apply to all assessments in complicated situations:

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[674] See *Nichomachean Ethics* X, 7, in which Aristotle argues that *eudaimonia* is connected to all human capacities, which consist of both theoretical and practical reason. Thus *eudaimonia* or flourishing involves, besides virtues, both reason and emotions. On Aristotle's conception of *eudaimonia*, see Nagel, *Aristotle on Eudaimonia*.

[675] "…pour juger de ce que l'on doit faire pour obtenir un bien, ou pour èviter un mal, il ne faut pas seulement considérer le bien et le mal en soi, mais aussi la probabilité qu'il arrive ou n'arrive pas et regarder géometriquement la proportion que toutes ces choses on ensemble." Arnauld & Nicole, *La logique ou l'art de penser*, p. 353; Arnauld and Nicole, *Logic or the Art of Thinking*, pp. 273-74.

> "…in this as in other disparate and heterogeneous assessments with more than one dimension (so to speak), the magnitude of the thing in question is made up proportionately of two estimates; it is like a rectangle with two things to be considered, namely its length and its breadth." [676]

This idea could be applied to both considerations, one of which concerns the good itself and the other the likehood that the good will materialise. In both cases the vectorial model could be understood as a functional analysis of different goods, which are separate and in competition with each other. However, assessing the good seems to be a more complicated process since the estimation of probability involves more developed methods, which I described in Chapter 6. In what follows I will concentrate on Leibniz's remarks on the assessment of the good in different situations.

The idea of a function in mathematics was made popular by Galileo in his *Two New Sciences*[677], and was developed further by Torricelli, Descartes, Roberval, Wallis and Gregory.[678] Leibniz used the term in the modern sense, that is to mean any quantity varying from one point to another along a curve.[679] The curve could be illustrated by a coordinate system.

If we consider Leibniz's account of deliberation in practical terms, it is clear that the values are only estimations, and consequently the resulting function is also uncertain. The values to be estimated are often impossible to evaluate by quantative methods. However, the vectorial model could be of great heuristic

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[676] "…qu'icy, comme en d'autres estimes disparates et heterogenes et pour ainsi dire de plus d'une dimension, la grandeur de ce dont il s'agit est en raison composée de l'une et l'autre estimation, et comme un rectangle, où il y a deux considerations savoir celle de la longeur et celle de la largeur." (*Nouveaux Essais II*, xxi, §66). A VI, 6, 206; RB, p. 206.

[677] *Discorsi e dimostrazioni matematiche, intorno a due nuove scienze attenenti alla meccanica e i movimenti locali*, 1638.

[678] Kline, *Mathematical Thought from Ancient to Modern Times* 1, p. 338.

[679] In another much later connection Leibniz used the term to mean quantities that depend on a variable. Kline, *Mathematical Thought from Ancient to Modern Times* 1, p. 340.

value since, by employing it, we are able to compare different proposed options and map them with respect to different criteria.

It seems that Leibniz conceived of the vectorial model early in his career (the earliest example is his memoir on the succession of the king in Poland in 1669; I will discuss this in Chapter 11.3.2.4.) and he applied it most explicitly at the beginning of the 1670's.[680] However, there is evidence that he used it at different stages, as my case studies will show, and he returned to the model in *Nouveaux essais* and *Essais de Theodicée* at the beginning of the 18th century. This systematic approach and the number of examples I give of the use of the model support the view that Leibniz considered it to function as a general model of rational decision-making in complicated cases.

Although Leibniz usually applied the model without explaining the details, he did elaborate on it in a few cases. Perhaps the best example is his discussion of happiness in a draft document, related to *scientia generalis*.[681] Here he considered the good, in this case happiness, "*ex ductu bonitatis in durationem*."

> "If we are to discuss that properly, we must use mathematical operations and say that the whole of the good consists in how long the good can be sustained (*ex ductu bonitatis in durationem*), as in land measurement a field (are) is measured by breadth in length (*ex ductu latitudinum in longitudinem*)."[682]

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[680] Jon Elster has argued that Leibniz seems to have used the vectorial model before he had the mathematical tools to apply it to practical problems. Elster, *Leibniz et la formation de l'esprit capitaliste*, p. 124. This view seems plausible, since most of the examples we have are from the end of the 1660's and the beginning of the 1670's, that is from his pre-Parisian period. Parmentier also sees here a preliminary stage of differential and integral analysis, noting that Leibniz's model always needs a qualitative component – that is choosing the variables in question. Parmentier, *Concepts juridiques et probabilisted chez Leibniz*, pp. 473-74.

[681] This example is mentioned in Couturat, *La logique de Leibniz*, p. 564. On the relevant text, see G VII, p. 115.

[682] "Darnach eigentlich davon zu reden, muss man auss Mathematisch damit verfahren und sagen, die ganze gröse der guthe entstehe daraus man die güthe in daure führe (ex ductu bonitatis in durationem) wie bei

There are two separate continuous values, the duration and the intensity of the good. If the agent is inclined to choose the maximum possible intensity, the result is great happiness, which will last only for a short time. If he or she chooses maximum duration, the happiness is not very intense.[683]

Leibniz argued that eternal evil, however small, can outweigh a temporal good, however great.[684] By turning the issue upside down he reasoned that in the long run strong sensual feelings (passions) were harmful, and if the oil-lamp burned with too great a flame it would soon go out.[685] Thus we must strive at a reasonable intensity of good that lasts for a long time. In this way the different inclinations (duration and intensity) "combine and the volition is the result of the conflict amongst them."[686] One encounters both values to a degree, but the overall result is better than either of the extremes. As with perfection, the whole is more important than the parts.

When we choose rationally in this case we try to find a course of action that brings about the optimal good. However, sensual temptations might lead us to believe that maximum intensity of good is the best we can choose. If we follow this wrong idea of the good, our proposed actions produce something other than the desired effect. Even if we choose the most probable act in terms of the eventuation of the good, it is a wrong act because our idea of the good is misguided.

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den Messkünstlern die Feldgrössen (Areae) aus der führung der Breiten in die Länge (ex ductu latitudinum in longitudinem)." G VII, p. 115.

[683] "Kan man derowegen nicht schlecterdings sagen, dass ein kurzes guthe mit einem langwierigen übel für böss zu halten, denn es könnte dieses kurze guthe so gross sehn und das langwierige übel so klein, dass dennoch das guthe überwege." G VII, p. 115.

[684] Here are echoes of Pascal's famous wager.

[685] "In übrigen ist gewiss, das alle starcke sinnliche empfindungen schädlich sehn, und mit einer allzustarcken flamm einer lampe zu vergleichen, die das oel zu früh verzehret…" G VII, p. 116. In what remains of the fragment Leibniz presented his pansofistic views on studying nature as a means of understanding and loving God.

[686] NE II, xxi, §39.

If we were to present this idea geometrically, we could take as coordinates the duration of the good and its intensity. We would thus end up with the figure below drawn by Leibniz himself: longitude represents the duration of the good and latitude its intensity.[687] The whole of the good is represented by the arc of the semicircle, which also shows the corresponding combinations of different values.

When the breadth of the area (*latitude*) varies, the length (*longitudo*) rises or falls, and vice versa.[688] It would seem that the largest area can be estimated by drawing rectangles inside the semicircle, the largest one being found by "multiplying" the middle points of both *longitudo* and *latitudo*.

Perhaps Leibniz thought that the geometrical analysis of a function would facilitate the comparison of different suggested combinations of values arrived at by non-quantative methods and the identification of the best one, although there is no mention of this in the text in question. One could also speculate that his *analysis situs*, a geometric method for comparing situations in a qualitative manner he developed at about the same time, had something to do with this comparison.[689] Since there is no textual evidence I am aware of, I will not dwell on these possibilities.

Instead, I will take up another text in which Leibniz attempted to apply exact values to a similar example, which was already discussed in Chapter 2.4.1. He described in a letter to Arnauld

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687 The figure is given in G VII, p. 115.

688 See G VII, pp. 115-16.

689 On *analysis situs*, see Münzenmayer, *Der Calculus Situs und die Grundlagen der Geometrie bei Leibniz*.

(1671) the estimation of a good man (beauty) with respect to Canon law:

> "Presuming that a man has wisdom of the third degree and power in the fourth, his total estimation would be twelve and not seven, since wisdom be of assistance to power."[690]

Thus beauty of a person is not his or her wisdom and power added up, but a balanced optimum (a product of multiplication) between these properties. It is not enough to balance the two as in the pair of scales model, and to strive for a compromise that would make them equally great. This would work if they were independent of each other, but this is not the case since on a higher level wisdom could contribute to power ("wisdom may be of assistance to power"), and probably also vice versa, although Leibniz did not state this explicitly. Both values have to be taken into account in estimating the overall value of the good man and the end result is a balanced combination.

This passage is something of an exception in Leibniz's writings since it is the only instance, as far as I know, in which he gave definite quantities to values such as wisdom and power. However, the idea is essentially the same as in the example of evaluating happiness in general science discussed above, and could be illustrated by a similar geometrical figure.

He uses a more metaphorical argument in another memoir from 1671, *Grundriss eines Bedenckens von Aufrichtung einer Societät in Deutschland*, which concerns scientific academies. He described the properties of a good prince as follows:

> "If power is greater than reason, he who possesses it is either a lamb who cannot use it at all, or a wolf and a tyrant who cannot use it well."[691]

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690 "Fac aliquem esse sapientem vt 3, potentem vt 4: erit tota eius aestimatio vt 12, non vt 7, nam quouis potentiae gradu sapientia vti potest." A II, I, p. 174. See also See FC VII, p. 30.

691 "Ist die Macht gröser als der Verstand, so ist der sie hat entweder ein einfältig schaff, wo er sie nich weis zu brauchen, oder ein Wolff und Tyrann, wo er sie nich weis wohl zu brauchen" (*Grundriss eines Bedenckens*

Those who have more power than reason are either unable to use the power or they use it arbitrarily. In the latter case they are bad rulers or tyrants, and in the former they are also bad rulers because they are weak. On the other hand, those with more wisdom than power to use it are "overpowered." Leibniz argued that such people have the right to be counsellors and their princes should listen to them patiently.[692] The ideal prince is, of course, an optimum between wisdom and power. He used his power in proportion to his wisdom and has a beautiful soul (in the manner he argued in his letter to Arnauld) .

> "Those to whom God has given at once reason and power to a high degree are heroes created by God to be the promoters of His will, as principal instruments..."[693]

As has been noted, the vectorial model is essentially a heuristic device. A further feature should be pointed out. The values in question are continuous and are infinite in degree. Thus one might discuss whether a little more good for the same duration of time would be better than a little less for a longer period, or whether a different combination of wisdom and power would be more optimal in terms of general perfection than another combination. Because of these continuous degrees of values there is an infinite number of possible combinations (variations), of which only one can be the best, the optimum.[694] By applying the model it is easier

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von Aufrichtung einer Societät in Deutschland, 1671) A IV, 1, p. 531; Leibniz, *Political Writings*, p. 24.

[692] A IV, 1, p. 533.

[693] "Welschen aber Gott zugleich verstand und macht in hohen Grad gegeben, diess sind die Helden, so Gott zu ausführung seines Willens, als principaleste instrumenta geschaffen…" A VI, 1, p. 533; Leibniz, *Political Writings*, p. 24.

[694] In a short note entitled *De tendentia* (1697, Grua, p. 487) Leibniz wrote that the tendency to real happiness "is not able to be firmly and originally assigned as the object of our tendencies, any more than a stone could be assigned the optimal path to the center, without hitting and shattering on the way down." Cited in Davidson, *Video Meliora Proboque, Deteriora Sequo*, p. 245.

to find these possible variations in each case, and to compare them with each other.

In sum, human rational decision-making in complicated and uncertain situations in which values compete against each other is, in an ideal case, optimum between separate inclinations leading to the good, and not a simple choice between good and bad. When we are deliberating in complex situations involving multiple values we reflect on the situation and choose the most important relevant criteria constituting the good in question. Then we make a judgement based on the vectorial model. After determining the good in question we employ moral calculus and consider which of the proposed actions best brings about the desired good. In the last phase of deliberation we are able to compare the overall value of different proposed courses of action and choose from them. If the apparently optimal course of action can be found, it is chosen. If we cannot grasp the optimum, we should at least choose the option that is most likely to bring about the good, or which seems to cause the least evil or imperfection in the world.

This kind of deliberation is familiar to us on the practical level, such as when we are buying a new washing machine. Supposing price equals quality, if we have an unlimited amount of cash at our disposal and complete knowledge of the machines on the market, we simply go to the nearest shop and buy the best machine there is. If we are less fortunate, we settle for a less expensive alternative, but try to buy a good machine despite this limitation. Within our budget, we try to buy as good a machine as possible.

We might take a few simple criteria as the basis of our choice. A good combination of values in this case would be quality and price. I might compare different washing machines by taking into consideration their alleged goodness (for example the amount of water and electricity used or the speed of the process we hear from friends or read about it in magazine) and their relative cheapness. In order to find good value for my money, my best choice would be a moderately cheap machine which is not the best in the market but is of good enough quality. Put in another way, I would have sufficient reason to choose this very washing machine.

If we think of buying a washing machine as an ethical action, we could extend the metaphor to include moral calculus. We could

assume that a virtuous person buys the machine that is least harmful to the ecosystem and in this way promotes general well-being. After having determined which machines offer a good combination of quality and price, he or she is then able to compare them and to choose the one that is likely to produce the least harm to the ecological balance of the world. If the chosen machine is optimal, it has the property of being the most ecological.

Having taken these two independent considerations into account the moral agent could be said to have deliberated rationally, and while the outcome is perhaps not the best possible in an objective sense, it is the best possible within the limits of his or her abilities. Thus it is the result of a rational decision-making.

11. 3. 2. More Examples of the Use of the Vectorial Model

In complex controversies of a political, theological or scientific nature, for example, the different reasons or opinions are often more or less related among parties and it is impossible to choose any one, or even to distribute them as in the pair of scales model. I will now consider some of Leibniz's practical applications and discuss in detail some cases in which he seemed to apply the vectorial model. I have included only cases that illustrate his more or less transparent use of the model, but I am convinced that there are more to be found. I think, however, that this collection is sufficient to show that the vectorial model could be considered to have had a systematic value in Leibniz's views on practical rationality.

11. 3. 2. 1. Centres of Gravity

My first example is from Leibniz's work on dynamics, and concerns centres of gravity. It is included here in order to illustrate Leibniz's way of arguing in natural philosophy which can be seen to have acted as a model to his vectorial model of decision-making.

On October 13, 1690 he wrote to Huygens that he had found a general principle, according to which

> "Any moving body having several directions at the same time must go in the line of the direction of the centre of gravity common to as many moving bodies as there are directions, if we imagine the single moving body multiplied as many times as are needed to make each direction function fully at the same time, and that the velocity of the moving body in the compounded direction must be to that of the centre of gravity of the [fictitious] device as the number of directions is to unity."[695]

Huyguens was not convinced and thought that, while this kind of method might suffice for discovering phenomena, more certain proof was needed.[696] Leibniz tried to clarify the issue in a 1693 memoir, issued in *Journal des Sçavans* on September 9, 1693, p. 417.[697] I will rely here on a concise summary provided by Pierre Costabel:[698]

> "A moving body A is supposed to be subjected to "various tendencies" such that if each were acting individually, they would cause the body to travel with uniform motion in one second along the straight segments AB, AC, AD, AE, etc. In order to find the motion resulting from the simultaneous action of the different "tendencies" Leibniz made use of a fictitious device. He imagined that the moving body was shared equally between the "motions so as to satisfy them all together perfectly." For example, if there were four tendencies, then "each acquired only one fourth part of the moving body which had to go four times further in order to make as much progress as if the whole moving body had satisfied each tendency." The centre of gravity of the parts of the moving body also progressed four times further and its displacement gave the required displacement of the undivided moving body A subjected to the action compounded of the different tendencies. If G were the centre of gravity of points B, C, D, E at which the moving body A would converge if each tendency acted separately,

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[695] Nowadays these velocities ("tendencies") would be illustrated by vectors, as Costabel goes on to argue. Costabel, *Leibniz et la dynamics*, p. 77.
[696] Ibid., p. 88.
[697] The text is published in Costabel, *Leibniz et la dynamics*, appendix, pp. 107-109.
[698] Ibid., pp. 88-89.

the moving point AM = 4 x AG would be the compound or resultant displacement."[699]

These four tendencies, or vectors, as one would call them today, are thus affecting the body at the same time and the centre of the gravity can be found by multiplicating one-fourth of each vector with the moving body. Thus if the body A travels a straight line, the centre of the gravity is four times further than the original place of the body A.[700]

Using this kind of fictitious device Leibniz concluded that the centre of gravity is a product of various tendencies and the centre of gravity can be found by multiplicating the tendencies. However, similarly as to the inclinations of the soul, the tendencies can also rule each other out, if they are equal, but opposed to each other. [701]

11. 3. 2. 2. Doctrina conditionum

As mentioned, Leibniz usually applied the pair of scales model in legal cases. However, in the following example he apparently used the vectorial model in a somewhat similar manner as in the centre-of-gravity case discussed above.[702] This example, in which he discussed a reasonable verdict, is from a memoir entitled *Doctrina conditionum* (1667-69), which contained his most extensive discussion on conditional rights.[703] The following example, which

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[699] Leibniz wrote in the article: "Ainsi il arrivera au mobile la même chose qui arriverait à son centre de gravité, si ce mobile ce partageait également entre ces mouvements pour satisfaire parfaitement à tous ensemble. Car le mobile étant partagé également entre 4 tendences, il ne peut échoir à chacune qu'une quatrième partie du mobile qui devra aller quatre fois plus loin, pour avoir autant de progrès que si le mobile tout entier avait satisfait à chaque tendence. Mais ainsi le centre de gravité de toutes ces parties irait aussi quatre fois plus loin." Costabel, *Leibniz et la Dynamics*, appendix, pp. 107-08.

[700] Costabel, *Leibniz et la dynamique,* appendix, p. 107-109.

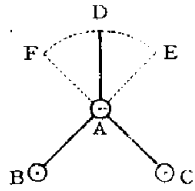
[701] "Et si les deux tendences contraires étaient égales, il n'y aurait point de mouvement." Costabel, *Leibniz et la dynamique,* appendix, p. 109.

[702] For a similar application in the field of optics, see *Demonstratio Legum Reflexionis et Refractionis*, Ger, pp. 45-46.

[703] A VI, i, pp. 368-430. It is also known as *Specimen certitudinis seu demonstrationum in Jure*, often also called simply *Specimina juris*, because it

he gave as point 271, concerns a case in which there are equal claims and the judge has to decide between them. He stated that this affair "contains in fact a sort of physical principle which is drawn from the nature of movement."[704] This physical model is the following:

> "Let there be a body A which is moved uniformly at the same moment by two bodies, B and C. The first is according to the line BA, the second according to the line CA. Let us divide the angle BAC in two equal parts by the line AD and the opposing side in two bodies by the movement B and C and extend the lines BA to E and CA to F. I say that body A will advance following the line AD. …If A was pushed only by B, it would advance following the line AE and, on the contrary, if it was [pushed] by C, it would be according to the line AF."[705]



Leibniz applied the model to jurisprudence.[706] The two opposing parties in the legal case correspond to the movements BA or BE and CA or CF. The effect of movement B or C is greater when the angle with respect to A is smaller, and it is maximal when the angle is zero. This model could be applied to a case of hereditary

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appeared in 1669 as part of a collection of jurisprudical examples. The others were *Ex jure collectae* and *De casibus perplexis*.

[704] "Habet enim ea res principium quoddam physicum ex natura motus." A VI, I, p. 392.

[705] "Esto igitur Corpus A. in quod eodem tempore uniformi impetu impingant duo corpora BC, illud juxta lineam BA hoc juxta lineam CA. Bisecetur angulus BAC rectâ AD à duobus moventibus BC aversâ, et producantur utcunque linae: BA in E, CA in F. Ajo corpus A processurum linea AD…igitue si quidem à solo B fuisset impulsum, processiset linea AE, sin à solo C, linea AF." A VI, I, pp. 392-93. The figure below is from A VI, 1, p. 392.

[706] See A VI, 1, p. 393.

rights – when only one party is present it will have all, but if the other party or parties appear, its share is diminished depending on the strength of their accepted claims.

Depending on the reasons or proofs offered by parties B and C, the judge inclines towards either E or F (which may represent a stronger inheritance claim). The result is a verdict based on the reasoned judgement of the judge. It favours party B or C, but does not give total rights to either, since both have a lawful claim. If the claims are equally strong, the judge ends up with an optimum (marked D), which satisfies both claims.

11. 3. 2. 3. Religious controversies

During the whole of his career Leibniz was involved in conciliatory efforts to ease religious controversies. His motives are debated, but it seems clear that they were not only religious. The controversies constituted one of the most serious barriers to scientific co-operation and general peace, which were his main goals in practical terms. Religious unity would enable general progress and help mankind to promote universal perfection. This is also why he repeatedly attacked libertinism and various sects, and strived to establish a common, universal Christian religion.

His conciliatory approach was evident in his belief that in every religion there was a seed of truth, and it was for this reason he advocated forming a new version of Christian religion rather than choosing one version of many. This rational theology should be based on philosophy and reason so that every rational person would believe in it.[707] His own defence of the mysteries of the Christian faith was closer to the Lutheran doctrine, but his later theological views were more sympathetic to the Catholics,

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[707] A good example is a fragment entitled *Animadversiones in Schedam ex Batavis missam* (A VI, 4, p. 395), in which Leibniz attempted to define the essential principles of various Protestant sects such as the Arminians, the Socinians and the Anabaptists, and to reduce them to their essentials in order to find some common ground. Here his method was based on "hard" logic, in other words, real definitions.

although he never accepted numerous offers of conversion to Catholicism.[708]

Leibniz's general approach in his conciliatory efforts is revealed in a letter to Bossuet in which he set out three principles for realising the union. The first of these was exactness of language (all participants understand all the concepts in the same way) - controversies are often verbal in nature. The second was religious tolerance and the idea that both parties had to make some concessions to the other, and the third was progress in small steps (one should leave the most difficult issues to be resolved last).[709] I cannot go into the actual negotiations here, but I will discuss some specific theological problems and Leibniz's memoirs related to them.[710] I will consider first Leibniz's effort to defend the rationality of Christian mysteries, which he thought extremely important. He was motivated by Spinoza's parrot argument in *Tractatus theologico-politicus* that discussing mysteries without proof was like repeating words like a parrot without understanding them. While the Socinians were silenced by being shown that mysteries were beyond demonstration, Leibniz had to satisfy Spinoza's argument by showing that they were not totally incomprehensible.[711]

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[708] There was perhaps no other Protestant theologian who would have allowed as many concessions to the Catholics as Leibniz. However, he never accepted the trial of Galileo nor the other intolerance in Catholic Church in general. See his letter to Marie de Brinon, in which he confessed to being a Catholic at heart: "Vous avez raison, Madame, de me juger catholique dans le coeur; je suis mesme ouvertement: car il n'y a que l'opiniastreté qui fasse l'hérétique; et c'est de quoi, grâce à Dieu, ma conscience ne m'accuse point." (Leibniz to Brinon) FC I, p. 235.

[709] Leibniz, *Political Writings*, pp. 189-90.

[710] For a thorough presentation of the reunion negotiations, see Eisenkopf, *Leibniz und die Einigung der Christenheit.*

[711] Leibniz was convinced that the mysteries of Christian beliefs must be defended, since without them the traditions of the Christian religion would be corrupted and it would lose its ultimate basis, thus giving room to atheism. He argued this point in *Essais de Theodicée*, §28 as follows: "…quand il s'agit d'opposer la raison à un article de nostre foy, on ne se met point en peine des objections qui n'aboutissent qu'à la vraisemblance: puisque tout le monde convient que les mysteres sont contre les

The most difficult problem in the reunion of the churches was the controversy over the mystery of transubstantiation. This and other Christian mysteries were beyond demonstration, but Leibniz strived to find a common position in this question, so that both parties could accept it.[712]

The Catholic doctrine of transubstantiation, which was proclaimed in the Council of Trent, was described in Aristotelian terms of the substance of the bread being turned into the body of Christ and the substance of the wine being turned into his blood. The (perceived) accidents remained unchanged, but the substance was miraculously transformed, which was contrary to all other phenomena in the natural world, in which all accidents and substances conformed to each other.[713]

Luther rejected this view and insisted that the bread and wine became the substance of Christ's body and blood while retaining their natural qualities, just as red-hot iron was both red and fire. Since Christ was present everywhere by his divine nature or ubiquity, and all the powers of his divine nature were communicated to his human nature, he could be present on a thousand altars simultaneously. In this way he was present in the bread and wine.[714] Thus while according to the Catholic doctrine the substance of the wine and the bread is changed, it is retained in the Lutheran doctrine.

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apparences, et n'ont rien de vraisemblable, quand on ne les regarde que du côté de raison; mais il suffit qu'il n'y ait rien d'absurde. Ainsi il faut des demonstrations pour les refuter." G VI, p. 67. For a discussion, see Goldenbaum, *Leibniz's Three Strategies for Defending Christian Mysteries.*

[712] On the epistemological status of mysteries, see Antognazza, *The Defence of the Mysteries of the Trinity and the Incarnation: an Example of Leibniz's "Other Reason"*, p. 286 and Goldenbaum, *Leibniz's Three Strategies for Defending Christian Mysteries.*Transsubstantion was also essential to the early development of Leibniz's metaphysics. Each stage of his philosophical development and every modification of his system, was accompanied by an explanation of the eucharist and a demonstration that his metaphysical system was compatible with transsubstantion. Fouke, *Metaphysics and the Eucharist in Early Leibniz*, p. 145.

[713] White, *Introduction to Christian Worship*, p. 253.

[714] Ibid., p. 255.

In seeking a middle way between these doctrines Leibniz suggested that it was only necessary to believe that in the transformation the wine contained the blood of Christ, or that the bread contained the body of Christ, in some sense.[715] He argued that the mysteries held some meaning, although it was impossible to know exactly what it was. Since one could not have a clear and distinct idea of the transformation, one had to make one's judgement on confused, uncertain grounds which, nevertheless, included some, albeit confused, understanding of the terms.[716] Thus the terms had some meaning and were not only empty words. Secondly, the transformation could be presumed possible unless proved otherwise. It is evident that Leibniz thought this discovery was important, as he showed in his letter to Arnauld in 1671:

> "Namely the following will also be shown (which has occurred to no one): that transubstantiation and real presence do not differ in the final analysis…Therefore transubstantiation, which is expressed in a very careful clause of the Council of Trent…does not contradict the confession of Augsburg, it even results from it. Thus the only question between the two parties remains: whether the real presence or transubstantiation (which involve each other, as I will show) exist momentarily and merely last in the moment of the using or taking, as taught by the confession of Augsburg, or if they simply last from the time of the beginning of the sacrament until the time of the corruption of the external appearances, as taught by the Roman church. This controversy contributes nothing to the given question, because each of the two opinions is equally feasible."[717]

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[715] *Commentatiuncula de Judice Controversiarum* (1669-71), A VI, 1, p. 551.

[716] On Spinoza's argument and Leibniz's reaction to it, see Goldenbaum, *Leibniz's Three Strategies for Defending Christian Mysteries*, p. 567.

[717] "Nam hoc quoque ostendetur, quod nemini in mentem venit, Transsubstantionem et multipraesentiam realem in vltima Analysi non differre…nec proinde Transsubstantionem, vt cautissima phrasi a Conclilio Tridentino expressa…contradicere Confessioni Augustanae; imo ex ea sequi. Nec nisi in summa quaestionem superesse inter has duas partes, an siue praesentia realis, siue transsubstantiatio, quas ostendam in se inuicem contineri, sint instantaneae, nec durent nisi momento vsus seu sumptionis, vt docet Confessio Augustana; an vero coeptae tempore

The presumption of the possibility of transubstantiation allowed space for various interpretations, which was precisely Leibniz's goal – both confessions could agree on this one. Thus Leibniz believed that he had found an ecumenical optimum between the confessions: he thought that transformation of bread and wine occured, but that there was no need for any demonstrable proof of how it happened.[718] The essential task was to argue that it was possible. As Christ himself stated and as Luther recommended, it was only necessary to believe that in some sense the bread and wine contained the body of Christ, and there was no need to decide upon "whether the bread is made of the body of Christ, or the body of Christ is contained in the bread."[719] The only absolute standard had to be compatibility with the scriptural pronouncements and the absence of logical and metaphysical impossibility.

An earlier attempt at this goal was a memoir entitled *De Transsubstantiatione* (1668) which was related to the grand project *Demonstrationes Catholicae.* The memoir reflected his metaphysics at the time, and this is why it is often employed in interpretations of his early theory of substance.[720] A metaphysical explanation of the transformation of the bread and wine into Christ's body and blood

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consecrationis durent usque ad tempus corruptionis specierum, vt tradit Ecclesia Romana? Quae controversia nihil pertinet ad rem praesentem: Nam vtraque sententia aeque possibilis est…" (Leibniz to Arnauld, November 1671) A II, 1, p. 175; translation from Goldbaum, *Leibniz as Lutheran*, p. 179.

[718] According to Fouke, it would be more accurate to say that Leibniz rejected Luther's approach to the metaphysical analysis of transsubstantion. Fouke, *Metaphysics and the Eucharist in the Early Leibniz*, p. 148. For similar examples of the use of presumption in defence of mysteries, see Antognazza, *The Defence of the Mysteries of the Trinity and the Incarnation: an Example of Leibniz's "Other Reason"*, p. 294f.

[719] "Si igitur audio Christum dixisse: hoc est corpus meum, necesse est ut sub voce hoc mihi confusè obversetur: omne illud qvod in priori commate anteccist, nimirum panis, et qvicqvid eo continetur, ut ita non determinetur ista confusa acceptione panisne sit factus corpus Christi, an aliqvid qvod eo continetur sit corpus Christi, sufficiat nos accipere id qvod sit corpus Christi." (*De judice controversiarum*, §23) A VI, 1, p. 551.

[720] See, for example, Mercer, *Leibniz's Metaphysics*, pp. 87-89 and Adams, *Leibniz: Determinist, Theist, Idealist*, p. 353f.

is difficult to accept, since it entails the same substance being in many different places at the same time, and means that the nature of a concrete thing (bread, for example) is able to change while its features remain. Leibniz began his memoir by listing certain points:

> 1) Bread and wine, losing their own substance, acquire the substance of Christ's body [and blood]
> 2) They become everywhere numerically identical with it
> 3) Only their appearance or accidents remain
> 4) The substance of Christ's body [and blood] is present in all places in which consecrated bread and wine appear.[721]

The crucial terms here are substance, appearance or accidents, and numeral identity, which Leibniz claimed to have explained clearly.[722] In the first section he argued that each substance has a principle of activity within itself (substantial form). While the mind is independent, the body is dependent on union with it, since no body can be a substance apart from the concurring mind and therefore no body has a principle of activity within itself. When the concurring mind is transubstantiated, the body is also changed, since bodies can act only in union with minds.[723] Thus when the substance (mind) is changed, the bodies of wine and bread are transubstantiated into the body of Christ. Leibniz concluded the section as follows:

> "Hence bread and wine as bodies, when the concurrent mind is changed, are substantiated into the body of Christ, or taken up by Christ (inasmuch as the special concourse of the mind of Christ which takes on the bread and wine, in addition to its body, is substituted for

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[721] A VI, 1, p. 508; L, p. 115
[722] A VI, 1, p. 508.
[723] (§4-10) A VI, 1, pp. 508-509. At this time Leibniz had not yet come to the theory of the pluralism of mental substances. On substantial forms of mind and body, see Mercer, *Leibniz's Metaphysics*, p. 85.

> the general concourse of the universal or divine mind with all bodies.)"[724]

However, the concurring mind does not change the essence of the bread. Only the mind containing its principle of activity has changed, and thus the appearance of the bread and wine remains.[725] The change of the mind in the corporeal substance is sufficient for transubstantiation. Later in the memoir Leibniz defined transubstantiation as the change of substantial form.[726]

As the transubstantiated bodies of bread and wine are in union with the mind of Christ, the power of his mind allows it to operate in more than one place simultaneously.[727] As the substance of Christ can simultaneously be in Rome as well as in Helsinki, so can the bread that is in union with the mind of Christ.

Leibniz's argument proceeds as follows. The mind can think of many things at once and therefore it can operate in many places at once. The mind of Christ can bestow operation both on his own body and on the species of consecrated bread and wine in numerically different instances of the latter in different places. Therefore the mind of Christ is present everywhere in the appeareances of wine and bread, as is his body.[728]

In Leibniz's model, which is roughly analogous to the Aristotelian concept of substance, there is a substantial change in the metaphysical sense, but the accidents, the bread and the wine, retain their features.[729] Thus the Lutheran and the Catholic views are only different perspectives on the same thing. Leibniz's solution was designed to be acceptable to both confessions, and

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[724] "Panis igitur et vinum tanquam corpora, mutata mente concurrente (quatenus in locum concursus generalis, quem mens universalis, seu Divina omnibus Corporibus impertit, substituitur concursus specialis mentis Christi, quae assumit panem et vinum in corpus…transsubstantiatur in Corpus Christi seu a Christo assumtum." (§11) A VI, 1, p. 509; L, p. 116.

[725] See Mercer, *Leibniz's Metaphysics*, p. 86.

[726] (Scholia) A VI, 1, p. 511.

[727] See Adams, *Leibniz: Determinist, Theist, Idealist,* p. 358.

[728] (§ 26-30), A VI, 1, p. 510.

[729] See Mercer, *Leibniz's Metaphysics*, p. 88.

thus he was able to argue that his metaphysics provided the true Christian philosophy. His theory also worked well against the Cartesians, since he could avoid the difficult problem of the multipresence of extended bodies. It is evident that this problem was not solvable by means of the pair of scales model since the positions differed from each other only in degree. Resolution required an analysis of the issue in itself that combined both positions in a manner that was independent of the solutions given earlier, but acceptable to both parties.

While Leibniz sought an optimal solution between the confessions in *De Transubstantiatione*, his position moved considerably closer to the Catholic views later on. This is evident in his most extensive theological work, *Systema Theologicum*, which gives an almost Catholic account of the Christian religion. This change was related to changes in his views on metaphysics and on the pluralism of dynamic substances.[730] The final views on transubstantiation, which he put forward in his correspondence with Des Bosses, had little in common with his earlier ideas.

Leibniz made another unsuccessful attempt to arrive at an optimal solution to religious matters in 1706, when Queen Sophie Charlotte's son, Crown Prince Friedrich Wilhelm of Prussia, became engaged to his cousin, the Princess Sophie Dorothea, daughter of the Elector of Hanover and the banished Princess Sophie Dorothea of Ahlden.[731] The tension between Hanover and Berlin was great at the time, and the situation was made more difficult by the fact that the Hanoverian Princess did not agree to

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[730] See Fouke, *Metaphysics and the Eucharist in the Early Leibniz*, pp. 157-58. See also Fouke, *Dynamics and Transubstantion in Leibniz*, p. 47.

[731] Princess Sophie Dorotea was banished from the Court of Hanover because of adultery. The details concerning the wedding are given in Aiton, *Leibniz, A Biography*, p. 269f and Hirsch, *Der Berühmte Herr Leibniz*, p. 468f. For a history of the wedding controversy, see Schnath, *Geschiche Hannovers im Zeitalter der neunten Kur und der englischen Sukzession* 1674-1714, Bd. 3, pp. 580-88.

change her Lutheran beliefs to the Calvinist faith of the Crown Prince.[732]

The wedding took place by a proxy in Hanover, the Electoral Prince of Hanover representing the bridegroom, and three days later the Princess travelled to Berlin. This way of conducting the marriage was questioned by the master of ceremonies, Johann von Besser of Berlin, who wanted to please the King by claiming that the ceremony that was to take place in Berlin was the true marriage. The Elector of Hanover then asked Leibniz (who had some influence in Berlin even though his friend, Queen Sophie Charlotte died in 1705) to prepare a memorandum that would demonstrate the validity of the marriage by proxy.

In correspondence with Court Chaplain Jablonski Leibniz suggested that there was an easy solution to the problem for both parties: the couple should be married according to the rites and liturgy of the Anglican Church. This was a surprising suggestion for which Leibniz gave the following grounds: first, both the Crown Prince and the Princess were descendants of the Electress Sophie of Hanover, the heir to the English crown, and secondly, the King was known to have an inclination towards the rites and liturgy of the Anglican Church. Leibniz showed which 39 articles of the English church were compatible with the Lutherans and the Calvinists.[733] Thus both the Princess and the Crown Prince could retain their religion and no conversion would be needed.

Leibniz tried to please both parties and at the same time to present an alternative that would be independent of both. Uncharacteristically, he did not take sufficiently into account the interests of the Princes, and his unwise suggestion was not received favourably. Although Jablonski was in favour, his rival, the reformed Bishop Benjamin Ursinus von Bär, strongly opposed

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[732] Hirsch, *Der Berühmte Herr Leibniz*, p. 469. On the political situation at the time, see Schnath, *Geschiche Hannovers im Zeitalter der neunten Kur und der englischen Sukzession* 1674-1714, Bd. 3, p. 543f.

[733] See Hirsch, *Der Berühmte Herr Leibniz*, p. 470 and Aiton, *Leibniz, A Biography*, p. 270. The correspondence with Jablonski is not yet published in the Akademie series, which is why I have had to refer to secondary sources.

it. Von Bär shared his opinion with the King, who forbade Jablonski to conduct further improper correspondence with Leibniz. The King did not wish to be patronised by a Hanoverian Court official, while the Hanoverians were concerned about their reputation due to the possible acquisition of the English crown and did not wish to cause any scandal or to present a test case. All in all, although theoretically persuasive, Leibniz's proposal was a grave miscalculation.

As a result of this scandal, the Elector of Hanover, Georg Ludwig, forbade Leibniz to undertake any further collaboration in endeavours to unite the Protestant Churches, which effectively put an end to his unification project. The marriage contract was finally ratified at the end of November, 1706.[734]

11. 3. 2. 4. Political Controversies

In his political career Leibniz chose the role of *l'honnête homme*, the respectable man, who is faithful to his superior officials and his prince and influences political matters only through them. His political orientation was clearly compatible with the most usual definitions of absolutism, which supported the absolute political power of a prince and the authority of the Pope.[735]

An example of his striving for the optimum in political cases dates from 1669, when he wrote a pamphlet for Baron Boineburg entitled *Specimen demonstrationum politicarum pro eligendo rege Polonorum* under the pseudonym *Georgio Ulicovio Lithuano*. This work was meant to prove that one candidate (Philipp Wilhelm von

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[734] Hübener, *Negotium irenicum – Leibniz's Bemühungen um die brandergurgische Union*, p. 137.

[736] The following version is presented by J. P. Sommerville : "Absolutists were thinkers who held that the prince is accountable to God also for his actions within his realm, that his commands ought to be obeyed by his subjects provided that they do not conflict with Divine positive or natural law, and that he (and these acting on his command) ought never to be resisted actively by his subjects. A prince could be a specific person or persons, for though absolutism generally preferred monarchy to aristocracy and democracy, they seldom claimed that it was the only valid form of government." Sommerville, *Absolutism and royalism*, p. 348.

Neuburg, who had the support of Leibniz's patrons) of the four main ones was the best choice as the new King of Poland (the former king, Johann Casimir, had left the throne in 1668). The election was important in its time and the different candidates were backed by various great powers: Von Neuburg was supported by Brandenburg, Prince Karl von Lothringen was backed by Austria, Prince Condé by France, and the son of Peter the Great, Alexej Michailovic, was of course supported by Russia.[736]

My interest here is not in the political situation as such, but in the manner in which Leibniz argued on behalf of his candidate.[737] His style of presentation is *more geometrico* – the work consists of 60 propositions, 12 corollaries and four conclusions. His goal was to prove beyond doubt that Von Neuburg was the best candidate. The propositions concerned the current political situation in Poland on the one hand and the qualities demanded of the King on the other. Under Poland's constitution the good of the nobility was the good of the state (prop. I, A VI, 1, p. 6). Leibniz saw Poland as the last Christian front against the barbarians, the Tatars in the east and the Russians and Turks in the north and south, which was why the state needed a powerful army (prop. V-VI, A IV, 1, p. 9) and why the king had to be a Catholic (prop. XXII; A IV, 1, p. 20). Other necessary qualities included experience (prop. XXVI; A IV, 1, p. 24), a calm disposition, and a good family background (prop. XXX-XXIV; A IV, 1., pp. 26-32).

It was not necessary for the King to speak the Polish language just as long as he had some knowledge of Latin (prop. XXVII; A IV, 1, p. 24). He should not come from a neighbouring country because he might in that case desire to unite them (prop. XLVIII; A IV, 1, p. 42). In various respects the propositions were conceived to favour

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[736] Bittner, *Slavica bei G. W. von Leibniz*, p. 18.

[737] Waldemar Voisé suggests that Leibniz might have modelled his method on Erhard Weigel's (his former teacher in Jena) *Aritmetischen Beschreibung der Moral*-Weisheit, which was an attempt to replace metaphysical speculation about social phenomena by quantative concepts. Voisé, *La mathématique politique et l'histoire raisonnée dans le Specimen Demonstrationum Politicarum de Leibniz*, p. 64.

just one candidate: for example, in prop. XXVIII and XXIX it is advocated that the future King should be mature and in good shape. Leibniz's candidate, of course, was such a man (A IV, 1, p. 25).[738]

Proposition LIII (A IV, 1, p. 53), which concerned the military situation in Poland, presents an interesting argument that illustrates Leibniz's goals: in an optimal case the future King of Poland should be militarily capable, but should not be given enough military power to enable him to disturb the political balance in Europe. In this sense the proximity of his current territory was an essential feature: if it neighboured Poland, the combined land would constitute a threat to other powers nearby. Thus it was important to estimate the total power of the candidates, which could be done by multiplying the proximity by the military power as follows:

> "…the proximity is in itself a sort of power, and every aspect of power is itself multiplied by its proximity, from which it follows that the total power of a neighbour is a product of its proximity and its power, and is also the square of its power. In consequence the relation of simple power to the total power of a powerful neighbour is its square root …"[739]

Military power, measured by the number of soldiers, for example, was set against the degree of proximity. If a candidate possessed great military power but was not a neighbour of Poland he was ideal. However, a candidate from a country who had great military power was dangerous and should not be elected. Thus it was

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[738] See also prop. XLVII and XLVIII.

[739] "…vicinitas autem et ipsa potentiae genus est, et quaelibet pars potentiae per se multiplicatur per Vicinitatem, et per consequens, potentiae in potentiam. Ergo potentia simplex ad potentiam integram Vicini et potentis simul, erit, ut radix ad quadratum, vellatus ad rectangulum, quod secundi Corollarii rationem habere potest. A IV, 1, p. 53.

possible to estimate the total power of different candidates by applying the vectorial model and thus making a choice.[740]
According to Leibniz, the best choice would have been a member of the Jagello dynasty (prop. LIX; A IV, 1, p. 43-44), but since one was not available the future King should be a foreign, Catholic, experienced prince in his prime: of course, Leibniz's candidate fitted the bill (prop. L, A IV, 1, p. 46).[741] The optimum of proximity and power was attained in the person of Von Neuburg.

Because of unexpected delays, Leibniz's pamphlet was published too late to affect the election, but Boineburg's speech in support of Von Neuburg was based on his arguments.[742]

12. Summary of Part III

This part of the thesis was devoted to human deliberation. I started with the foundations of practical philosophy, in other words practical reason (Chapter eight) and Leibniz's moral philosophy (Chapter nine). It is worth reiterating that he considered moral

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[740] According to Marcelo Dascal, the method used in *Demonstrationum* is more akin to dialectical models (common in jurisprudence) where an advisor of a court presents to a prince a memoir where the most prominent options are emphasized by accentuating the logically strongest positions. In this sense it can be compared to *De casibus perplexis in jure* which I have presented above as an example of applying the pair of scales-method. See Leibniz, *The Art of Controversies*, p. liv. While I agree with the general description Dascal gives of the nature of the memoir, I think the emphasizing of two alternatives is mutual to both the pair of scales-model as to the vectorial model. Once this is done, one is to examine how the criteria are related to each other. One can, of course, evaluate the candidates by weighing between them in a dialectical manner, but here Leibniz referred to a result of multiplication of criteria rather than the sum of the desired features which is typical to the pair of scales model. For this reason I think he was not referring to dialectical weighing here.
[741] Leibniz's pamphlet did not have great influence, since it was published too late. The Austrian candidate was chosen with unfortunate consequences. See Davies, *God's Playground. A History of Poland*, vol 1, pp. 470-72.
[742] Aiton, *Leibniz, A Biography*, p. 26.

science to depend on truths of reason while moral practical action could manage without them, and that this was in principle due to moral instinct of pursuing joy and avoiding sorrow. We may be moved to act morally through feelings of increasing or decreasing perfection and regardless of reasoning in the proper sense, although happiness and wisdom are not possible without it. In both kinds of cases, however, emotion plays an important part. Choosing good brings us joy and eventually happiness, and in the process we also act for the good of our fellow men since wisdom includes being just – which Leibniz defined as being charitable to others.

While intellectual pleasures constitute the goal of moral action, there are also other kinds of pleasures that endanger our happiness. Passions consisting of confused perceptions are necessarily present in all our deliberations, and we must learn to distinguish the real from the apperent good, the latter often being sensual pleasures and thus more tempting than the former, which is often present in deliberation through symbols. Men should develop their understanding and imitate God, who is the model of all rational action and has supreme goodness.

In Chapter ten I turned to deliberation. Our deliberation is a conflict between different kinds of inclinations towards different goods, and our final volition is often a compromise. There are two kinds of cases. In the first kind the options are mutually exclusive and one has to decide between them or to make a compromise involving their distribution among the parties. The second kind is more complicated, since the goods are not exclusive and one has to consider all of them at the same time. In this case the deliberator should pick the ones that contribute most to the desired goal, and try to form an optimum between them. In both situations the deliberator should estimate both the relevant good and the consequences the recommended course of action will have.

These two kinds of situation require two different kinds of heuristic decision-making models, which I discussed in Chapter eleven. In the former, more simple case Leibniz applied the traditional pair of scales metaphor, and for the latter he devised a new kind of decision-making model founded on the mathematical doctrine of the calculus of variations, which was discussed in Part

I. While the former model is more simple and well-known, the latter is a complicated idea, which Leibniz never discussed systematically. However, from various writings it is possible to reconstruct it, which I attempted to do in Chapter 11.3.1.

These two kinds of models have been sketched by former commentators. My contribution has been to explicate the details in the light of various passages from Leibniz's writings, and to present case studies in which he applied them, often implicitly. The case studies I dicussed at the end of this part of the thesis support the view that these decision models carried a systematic value in Leibniz's practical rationality. It seems that he used them as theoretical instruments and methods of persuasion. Because of their nature, they are applicable only metaphorically or heuristically, but they seem to have been helpful to Leibniz in illustrating his ideas.

General Summary

In this study I have discussed Leibniz's views on rational decision-making from the standpoint of both God and man. While divine choice has been discussed extensively, the topic of human deliberation has been given much less attention, which is partly due to the fact that Leibniz did not discuss it systematically. However, he made some remarks and short reflections on the subject, and I have tried to bring them together to provide a comprehensive account of his views.

In my view, Leibniz thought that deliberation on complex matters is analogous to both God and man, the difference being that human deliberation is necessarily more difficult because of limited cognition. I think this claim is compatible with his insistence that humans should imitate God in their practical actions, and also supports the view that architectonic considerations had a systematic value in Leibniz's theory of rational decision-making.

The divine decision is an idealised rational decision since the only choice God ever makes is that of the best world among all possible worlds, which is extremely complicated and only possible for the infinite being. Leibniz did not profess to know all the details of this deliberation, but he gave us various hints about God's preferred criteria. However, it is unclear how these are to be understood and what their relation to each other is. This vagueness in Leibniz's writings has given rise to a most interesting and intricate discussion on the structure of the best of all possible worlds.

I have supported Nicholas Rescher's trade-off interpretation, according to which the divine decision is an optimum between the most important criteria (simplicity of laws vs. richness of phenomena). This interpretation is related to what was a new mathematical doctrine (exemplified by the brachistochrone problem), in Leibniz's time called the calculus of variations, according to which the object is to find an optimal solution among an infinite number of alternative paths in order to achieve an

extremisation (maximisation or minimization) of some specified characteristic (time or distance, for example). According to Rescher's interpretation, the optimal and most unique combination of minima (order) or maxima (variety) is the best of all possible worlds.

The competing interpretations put forward by David Blumenfeld and Donald Rutherford emphasised Leibniz's insistence that the best world included a maximum of essence or reality. Building on this, they do not accept Rescher's main idea of a trade-off between order and variety (in which neither feature reaches a maximum), but have supported an interpretation of Leibniz's doctrine that maximises all properties of the best world.

I have examined all these interpretations thoroughly, and have found Rescher's view most consistent in the light of some of Leibniz's major writings on metaphysics, although it is clear that there is no known incontestable textual evidence for (or against) any of them. In my view, Rescher's interpretation is most in line with Leibniz's doctrine of architectonics, which is at the heart of the problem.

The implications of Leibniz's architectonics are not limited to metaphysics and God's decision. As my discussion at the end of Part I and in Parts II and III shows, final causes are also the foundation of metaphysical goodness and human moral action. The happiness of human beings is ultimately founded on God's choice of the best world and on its optimal structure. Leibniz even suggested in PNG, §14 that our soul is architectonic.

The divine decision is also of extreme importance to human deliberation as a model, since Leibniz repeteadly insisted that men should follow God in their actions, and that there is a spiritual bond between the spirits and their creator, whose relationship to them is like a father to his children. There is, however, one essential difference between God and man, which affects his or her rational decisions. While God is an all-knowing, all-powerful and supremely good being without limitations, humans have to struggle in their practical decisions within their limited cognition.

The survey of human limitations in terms of cognition and reasoning has thus been an essential part of my presentation. My aim was, first, to highlight the practical problems humans have in

their rational decision-making and secondly, to show in what respects they are capable of developing themselves and their moral conduct. According to Leibniz, the knowledge we have in our practical decision-making is mostly uncertain due to the confusedness of our perceptions. Attention and alertness in humans are crucial in this process and in distinguishing real from apparent good. If our understanding is not developed enough, we may be led to akratic action, which Leibniz found common.

Of special interest is apperception, which is the foundation of systematic moral virtue and self-perfection. Unfortunately, Leibniz left this notion largely unexplained, and for this reason it has been a problematic topic for Leibniz scholars. I have supported the view of Robert McRae, according to which apperception requires innate ideas, against those of Nicholas Jolley and Mark Kulstad, who hold that there is also some awareness in minute perceptions. I have contributed to the discussion by arguing that the concept of attention is not sufficiently taken into account in most commentaries on apperception, and that internal sense or imagination is a way by which the connection between external objects and innate ideas can be understood.

When it is a question of truths of reason, it is possible to perform a complete analysis, but in practical matters, which involve contingent facts, any analysis is necessarily incomplete. Humans can sometimes reach a high degree of probability (moral certainty) in matters involving contingent facts, but in most practical situations the plurality of values and the limits of our cognitive abilities give us grave difficulties in our rational action. Leibniz took this fact seriously and tried to develop different ways of acting and deciding rationally in practical matters. He did this partly by making efforts to establish a demonstrative calculus of probabilities (the definitive solution), and partly by applying the "soft" approach to estimating reasons which produces presumptions or hypothetical theories. He was interested in both the calculative and the estimative theory of probability, as the legal examples I have presented indicate.

In the third part of the study, which constitutes my main original contribution to Leibniz studies, I turned to human rational decision-making. It must be borne in mind that, while God makes

only one choice, which is the most complex possible, humans deliberate daily and their choices may be simple or complicated. Leibniz's view of human deliberation was an amalgam of traditional and modern ideas. Of the latter, the most significant ones concerned the pluralism of values in deliberation, the importance of estimating the probability of the consequences of suggested acts, and heuristic models of decision-making that facilitate the mapping of the different goods in the situation.

In addition to providing an account of Leibniz's views on practical rationality, I have attached importance to some little-known features of his moral philosophy. One of these is his innate moral instinct to strive for joy and avoid sorrow, and another is the role of imagination in his practical rationality. These two features facilitate moral action without proper reasoning, although it seems clear that happiness and virtuous action require moral reasoning. They also help in explaining how exactly the feeling of perfection was a central motivation in Leibniz's moral philosophy.

Leibniz's emphasis on plural values is evident in his philosophy of the mind, in which judgement in the soul is an outcome of different inclinations leading to the good. The final product of this conflict is a recommendation for action, which the will usually follows. Thus we cannot affect our deliberations directly in most cases, and this is why we have to develop our understanding in order to become virtuous. In some cases (for example, when some strong passion enters our deliberation), as I argued in disagreement with some commentators, the will may act independently and reject the recommendation of the intellect by suspending action.

Leibniz had some novel ideas on deliberation. One was the importance he attached to probabilities – in decision-making one has to estimate both the goodness of the proposed act itself and its consequences for the desired good. Another novel idea is related to the plurality of goods in complicated decisions: since the deliberation in these cases is a combination of different goods, the ideal choice is an optimum between them, in which none of them are fully present, but are all acknowledged in the best possible overall choice.

Leibniz used models as a heuristic device for deliberating between options in order to map the various alternatives with respect to different goods. I have argued, in combining the views of Marcelo Dascal, Jaakko Hintikka and Simo Knuuttila, that there are two kinds of models of rational decision-making in Leibniz which he applied, often without explicating the details, to practical deliberations.

The more simple, traditional model of a pair of scales is well suited to, criminal-law decisions, for example, when it is a question of deciding for or against the accused. Another kind of case would be a situation in which a compromise was sought by distributing different goods among the parties, such as with an economic treaty. In more complicated cases the rational decision could be arrived at with the help of a new vectorial model of rational decision-making, which is an instance of the general doctrine of the calculus of variations and thus analogous to God's preferred method of choosing the best of all possible worlds (as interpreted in Nicholas Rescher's trade-off theory). The different combinations of goods could be presented geometrically, and this helps in comparing the different suggested actions.

My contribution to this discussion has been to explicate the details of the models in the light of various passages from Leibniz's writings, and to present case studies in which he applied them, often implicitly. I think the case studies I have found are sufficient to support the view that these decision models carried a systematic value in Leibniz's practical rationality, although as I have shown, they were often not successful in convincing his contemporaries. Furthermore, I am positive that there are more instances to be found in which Leibniz used the two models more or less implicitly.

As my discussion in Parts II and III showed, as much as Leibniz emphasised the importance of “hard”, rigorous reasoning and the importance of our self-perfection, he was clearly keen to find alternative, less demanding methods of deliberation in everyday situations, of which his own efforts at estimating probability and experiments by means of decision models was a clear indication.

Abbreviations

AG	Leibniz, *Philosophical Essays*
AT	Descartes, *Œuvres*
CSM	Descartes, *Philosophical Writings*
Dut.	Leibniz, *Opera Omnia*
FC	Leibniz, *Oeuvres*
G	Leibniz, *Die Philosophischen Schriften*
Ger	Leibniz, *Leibnizens nachgelassene Schriften*
Gr	Leibniz, *Textes inédits*
GW	Leibniz, *Briefwechsel zwischen Leibniz und Christian Wolff*
H	Leibniz, *Theodicy*
K	Leibniz, *Werke*
L	Leibniz, *Philosophical Papers and Letters*
M	Leibniz, *Rechtsphilosophisches…*
NE	Leibniz, *Nouveaux essais sur l'entendement humain*
O	Leibniz, *Opuscules et fragments inédits*
P	Leibniz, *Logical Papers*
RB	Leibniz, *New Essays on Human Understanding*

Bibliography

Sources

Arnauld, Antoine & Nicole, Pierre *Logic or the Art of Thinking*. Containing, besides common rules, several new observations appropriate for forming judgement. Translated and edited by Jill Vance Buroker. Cambridge University Press, Cambridge 1996.

- *La logique ou l'art de penser*, contenant, outre les regles communes, plusieurs observations nouvelles, propres à former le jugement. Edition critique présentée par Pierre Clair & François Girbal. Presses universitaires de France, Paris 1965.

Descartes, René *Œuvres* I-XII. Publiées par Charles Adam & Paul Tannery. Cerf, Paris 1897-1910. (AT)

- *The Philosophical Writings* I. Translated by John Cottingham, Robert Stoothoff & Dugald Murdoch. Cambridge University Press, Cambridge 1985. (CSM)

Diogenes Laertius, *Lives Of Eminent Philosophers*. Ed. R. D. Hicks, Heinemann, London, 1965 (1925).

Hobbes, Thomas *De Cive*. The English Version. Ed. Howard Warrender. Oxford University Press, Oxford 1987 (1983).

- *Human nature and De Corpore politico*. Ed. J. C. A. Gaskin. Oxford University Press, Oxford 1994.

- *Leviathan*. Edited by Richard Tuck. Cambridge University Press, Cambridge 1991.

Kant, Immanuel *Theoretical Philosophy*, 1755-1770. Translated and edited by David Walford in collaboration with Ralf Meerbote. Cambridge University Press, Cambridge 1992.

Leibniz, Gottfried Wilhelm, *The Art of Controversies*. Translated and Edited, with an Introductory Essay and Notes by Marcelo Dascal with Quintín Racionero and Adelino Cardoso. Springer, Dordrecht, 2006.

- *Briefwechsel zwischen Leibniz und Christian Wolff aus den Handschriften der koeniglichen Bibliothek zu Hannover*. Herausgegeben von C. I. Gerhardt. Olms, Hildesheim 1963 (1860).

- *Confessio Philosophi*. Papers Concerning the Problem of Evil, 1671-78. Translated, Edited, and with an introduction by Robert C. Sleigh, Jr. Yale University Press, New Haven, 2005.

- *Le Droit de la raison*. Textes réunis et présentés par René Sève. Vrin, Paris, 1994.

- *Leibnizens nachgelassene Schriften*. Physikalischen, Mechanischen und Teknischen Inhalts. Herausgegeben und mit erläuternden Anmerkungen versehen von Ernst Gerland. Teubner, Leipzig, 1906. (Ger)

- *L'estime des apparences*. 21 manuscrits de Leibniz sur les probabilités, la théorie des jeux, l'espérance de vie. Texte établi, traduit, introduit et annoté par Marc Parmentier. Vrin, Paris, 1995.

- *Logical papers*. A Selection Translated and Edited with an Introduction by G. H. R. Parkinson. Oxford University Press, Oxford 1966. (P)

- *New Essays on Human Understanding*. Translated and Edited by Peter Remnant and Jonathan Bennett. Cambridge University Press, Cambridge 1997 (1996). (RB)

- *Oeuvres* I-VII. Publiées pour la première fois d'après les manuscrits originaux avec notes et intoductions par Louis Alexandre Foucher de Careil. Olms, Hildesheim, 1969 (1867-75). (FC)

- 'On Estimating The Uncertain.' Translated by Wolfgang David Cirilo de Melo. *The Leibniz Review* 14 (2004).

- 'On Genorosity.' Translated by Donald Rutherford. *The Leibniz Review* 12 (2002).

- *Opera omnia*. Distributa, praefationibus & indicibus exornata, studio Louis Dutens. Tournes, Geneve, 1768. (Dut.)

- *Opuscules et fragments inédits de Leibniz*. Extraits des manuscrits de la Bibliothèque royale de Hanovre par Louis Couturat. Olms, Hildesheim, 1961 (1903). (O)

- *Philosophical Essays*. Edited and Translated by Roger Ariew and Daniel Garber. Hackett, Indianapolis & Cambridge, 1989. (AG)

- *Philosophical Papers And Letters*. A Selection Translated and Edited, with an Introduction by Leroy E. Loemker. 2nd ed. Reidel, Dordrecht, 1969. (L)

- *Die philosophischen Schriften* I-VII. Herausgegeben von G. I. Gerhardt. Olms, Hildesheim 1961 (1880-90). (G)

- *Political Writings*. Translated and Edited with an Introduction and Notes by Patrick Riley. 2nd edition. Cambrige University Press, Cambridge 1988.

- *Rechtsphilosophisches aus Leibnizens Ungedruckten Schriften*. Hrsg. von Georg Mollat. Robolsky, Leipzig, 1885. (M)

- *Selections*. Edited by Philip P. Wiener. Scribner, New York 1951.

- *Sämtliche Schriften und Briefe*, Reihe I-VII. Herausgegeben von der Berlin-Brandenburgischen Akademie der Wissenschaften und der Akademie der Wissenschaften in Göttingen. Akademie, Berlin 1923- (A)

- *Textes inédits* d'après les manuscrits de la bibliotheque provinciale de Hanovre I-II. Publiés et annotés par Gaston Grua. Presses universitaires de France, Paris 1948 (Gr)

- *Theodicy*. Essays on the Goodness of God, the Freedom of Man and the Origin of Evil. Edited with an Introduction by Austin Farrer. Translated by E. M. Huggard. Open Court, La Salle, 1996 (1951). (H)

- *Die Werke*. Hrsg. von Onno Klopp (K)

Locke, John *An Essay Concerning Human Understanding*. Edited with an Introduction, Critical Apparatus and Glossary by Peter H. Nidditch. Oxford University Press, Oxford, 1975.

Spinoza, Baruch *Ethics*. Edited and Translated by G. H. R. Parkinson. Oxford University Press, Oxford 2000.

Literature

Adams, Robert Merrihew *Leibniz: Determinist, Theist, Idealist*. Oxford University Press, Oxford 1995.

- 'Moral Necessity' in *Leibniz. Nature and Freedom*. Edited by Donald Rutherford and J. A. Cover, pp. 181-93.

- 'Must God Create the Best?', *Philosophical Review* 81 (1972), pp. 317-332

- 'Response to Carriero, Mugnai, and Garber', *Leibniz Society Review* 6 (1996), pp. 107-25.

Aiton, E. J. *Leibniz*. A Biography. Hilger, Bristol and Boston, 1985.

Alanen, Lilli *Descartes's Concept of Mind*. Harvard University Press, Cambridge, MA, 2003.

Antognazza, Maria Rosa 'The Defence of the Mysteries of the Trinity and the Incarnation: an Example of Leibniz's "Other Reason" ', *British Journal for the History of Philosophy* 9 (2001), 2, pp. 283-309.

Arthur, Richard T. W. 'Leibniz and Cantor On The Actual Infinite', http://www.humanities.mcmaster.ca/~rarthur/LeibCant.pdf.

Bayart, A., 'Leibniz et les antinomies en droit', *Revue internationale de philosophie* 20 (1966), pp. 257-63.

Belaval, Yvon *Leibniz critique de Descartes*. Gallimard, Paris, 1960.

Ben-Menahem, Hanina, 'Leibniz on Hard Cases', *Archiv für Rechts- und Sozialphilosophie* 79 (1993), pp. 198-215.

Biermann, Kurt R. & Faak, Margot 'G. W. Leibniz' "De incerti aestimatione"', *Forschung und Forstschritte* 31 (1957), 2, pp. 45-50.

Bittner, Konrad 'Slavica bei G. W. von Leibniz', *Germanoslavica* 1 (1931-32), Heft 1., pp. 3-32.

Blumenfeld, David 'Is the Best Possible World Possible?' *Philosophical Review* 84 (1975), pp. 163-177.

- 'Leibniz's Theory of the Striving Possibilities' *Studia Leibnitiana*, 5 (1973), pp. 163-77.

- 'Perfection and Happiness in the Best Possible World', in *Cambridge Companion to Leibniz*, edited by Nicholas Jolley, pp. 382-410.

Bobro, Marc Elliott *Self and Substance in Leibniz*. Kluwer, Dordrecht, 2004.

Bobzien, Susanne *Determinism and Freedom in Stoic Philosophy*. Oxford University Press, Oxford 1998.

Breger, Herbert et al. (Hg.), *Einheit in der Vielheit* I-II. VIII. Internationaler Leibniz-Kongress, Hannover, 24.-29. 7. 2006. Gottfried-Wilhelm-Leibniz-Gesellschaft, Hannover 2006.

Brown, Clifford 'Leibniz and Aesthetic', *Philosophy and Phenomenologal Research* 28 (1967), 1, pp. 70-80.

Brown, Gregory 'Compossibility, Harmony, and Perfection in Leibniz', *Philosophical Review* 96 (1987), pp. 173-203.

- 'Does the Best of All Possible Worlds Contain the (Absolute) Most?', in Breger et al. (Hg.), *Einheit in der Vielheit*, Vorträge, 1. Teil, pp. 106-10.

- 'Leibniz's Moral Philosophy', in *Cambridge Companion to Leibniz*, edited by Nicholas Jolley, pp. 411-41.

- 'Leibniz's Theodicy and the Confluence of wordly goods', *Journal of the History of Philosophy* 26 (1988), 4, pp. 571-591.

Brown, Stephen F. (ed.) *Meeting of the Minds*. The Relations Between Medieval and Classical Modern European Philosophy. Acts of the International Colloquium held at Boston College, June 14-16, 1996, organized by the Société Internationale pour l'Étude de la Philosophie Médiévale. Brepols, Turnhout, 1998.

Brown, Stuart 'Ex pluribus unum: Reason, Experience and Revelation as Alternative Sources of Truth for Leibniz', in Breger et al. (Hg.), *Einheit in der Vielheit*, Vorträge, 1. Teil, pp. 111-17.

- *Leibniz*. The Harvester Press, Brighton, 1984.

Brown, Stuart (ed.) *The Young Leibniz and his Philosophy (1646-76)*. Kluwer, Dordrecht, 1999.

Burkhardt, Hans *Logik und Semiotik in der Philosophie von Leibniz*. Philosophia, München, 1980.

Burns, J. H. (ed.) *The Cambridge History of Political Thought 1450-1700*. Cambridge University Press, Cambridge 1991.

Butler, R. J. (ed.) *Cartesian Studies*. Blackwell, Oxford 1972.

Calabi, Clotilde 'Leibnizian Pleasures', *Rivista di storia della filosofia*, 48 (1993), 2, pp. 239-81.

Carlin, Laurence 'Leibniz's Great Chain of Being', *Studia Leibnitiana*, 32 (2000), 2, pp. 131-50.

- 'On the Very Concept of Harmony in Leibniz', *The Review of Metaphysics*, 54 (2000), pp. 99-125.

Carriero, John 'Review of Robert Merrihew Adams's Leibniz: Determinist, Theist, Idealist' *Leibniz Society Review* 6, pp. 61-77.

Costabel, Pierre *Leibniz et la dynamique*. Les textes de 1692. Herrmann, Paris, 1960.

Coudert, Allison, Popkin, Richard H. & Weiner, Gordon M. (eds.) *Leibniz, Mysticism and Religion*. Kluwer, Dordrecht, 1998.

Couturat, Louis *La logique de Leibniz* d'après des documents inédits. Olms, Hildesheim, 1985 (1901).

Cover, J. A. and O'Leary-Hawthorne, John, *Substance and Individuation in Leibniz*. Cambridge University Press, Cambridge 1999.

Craig, Edward *The Mind of God and the Works of Men*. Oxford University Press, Oxford, 1987.

Dascal, Marcelo 'The Balance of Reason', in *Logic, Thought and Action*, ed. D. Vanderveken, pp. 27-47.

- 'Nihil sine ratione → Blandior ratio', in Poser et al. (Hg.), *Nihil sine ratione*. Mensch, Natur und Technik im Wirken von G. W. Leibniz, herausgegeben von Hans Poser et al., Vorträge, 1. Teil, pp. 276-80.

- 'One Adam and Many Cultures: The Role of Political Pluralism in the Best of Possible worlds', in *Leibniz and Adam*, ed. by Marcelo Dascal and Elhanan Yakira, pp. 387-409.

- *La sémiologie de Leibniz*. Aubier Montaigne, Paris 1978.

Dascal, Marcelo & Yakira, Elhanan (eds.) *Leibniz and Adam*. University Pubishing Projects, Tel Aviv, 1992.

Daston, Lorraine *Classical Probability in the Enlightenment*. Princeton University Press, Princeton, NJ 1988.

- 'Probability and Evidence', in *The Cambridge History of Seventeenth-Century Philosophy*, ed. Daniel Garber & Michael Ayers, pp. 1108-1144.

Dauben, Joseph W. (ed.) *Mathematical Perspectives*. Essays on Mathematics and Its Historical Development. Academic Press, New York 1981.

Davidson, Jack D. 'Leibniz on the Labyrinth of Freedom: Two Early Texts', *The Leibniz Review* 13 (2003), pp. 19-43.

- 'Video Meliora Proboque, Deteriora Sequor. Leibniz on the Intellectual Source of Sin.' In *Leibniz. Nature and Freedom*. Edited by Donald Rutherford and J. A. Cover, pp. 234-53.

Davies, Norman *God's Playground*. A History of Poland, vol 1. Oxford University Press, Oxford 1982 (1981).

Duchesneau, François *Leibniz et la méthode de la science*. Presses Universitaires de France, Paris, 1997.

Eisenkopf, Paul *Leibniz und die Einigung der Christenheit*. Überlegungen zur Reunion der evangelischen und katholischen Kirche. Schöningh, München 1975.

Elster, Jon *Leibniz et la formation de l'esprit capitaliste*. Montaigne, Paris, 1975.

Fouke, Daniel C. 'Dynamics and Transubstantiation in Leibniz's Systema Theologicum', *Journal of the History of Philosophy* 32 (1994), 1, pp. 45-61.

- 'Metaphysics and the Eucharist in the Early Leibniz', *Studia Leibnitiana* 24 (1992), pp. 145-59.

Frankel, Louis 'From a Metaphysical Point of View: Leibniz and the Principle of Sufficient Reason', in *Gottfried Wilhelm Leibniz*. Critical Asessments I, ed. R. S. Woolhouse, pp. 58-73.

Frankfurt, Harry G. *Leibniz*. A collection of critical essays. Edited by Harry G. Frankfurt. Anchor books, Doubleday & Co, New York, 1972.

Franklin, James 'The Ancient Legal Sources of Seventeenth-Century Probability', in *The Uses of Antiquity*. The Scientific Revolution and the Classical Tradition. Edited by Stephen Gaukroger, pp. 123-44.

- *The Science of Conjecture*. Evidence and Probability Before Pascal. The John Hopkins University Press, Baltimore, 2001.

Gaede, Friedrich & Perez, Constanze (Hrsg.) *Antizipation in Kunst und Wissenschaft*. Ein interdisziplinäres Erkenntnissproblem uns seine Begründung bei Leibniz. Francke, Tübingen 1997.

Gale, George 'Did Leibniz have a Practical Philosophy of Science? Or, Does "Least-Work" Work?' *Studia Leibnitiana*, Supplementa, 18 (1972), Bd. II, pp. 151-160.

- 'Is Leibniz *Really* a Rationalist?' *Synthesis philosophica*, 24 (1997), 2, pp. 391-402.

- 'Leibniz and Metaphysical Perfection, Physical Optimality, and Method in Physics; or, a Real *tour de force*', available at http://iml.umkc.edu/philosophy/gale/glenn.doc.

- 'On What God Chose: Perfection and God's Freedom', *Studia Leibnitiana* 8 (1976), 1, pp. 69-87.

- 'The Physical Theory of Leibniz', *Studia Leibnitiana* 11 (1970), 2, pp. 115-128.

Garber, Daniel 'Motion and Metaphysics in the Young Leibniz', in *Leibniz: Critical and Interpretive Essays*. Edited by Michael Hooker, pp. 160-84.

Garber, Daniel & Ayers, Michael (eds.) *The Cambridge History of Seventeenth-Century Philosophy* I-II. Cambridge University Press, Cambridge 1998.

Garber, Daniel & Zabell, Sandy 'On the Emergence of Probability', *Archives for History of Exact Sciences* 21 (1979), pp. 33-53.

Gaukroger, Stephen (ed.), *The Uses of Antiquity*. The Scientific Revolution and the Classical Tradition. Kluwer, Dordrecht, 1991.

Gil, Fernando 'Leibniz, la place d'autrui, le principe du pire et la politique de la La Monadologie', *Passé Présent*, no 3 (1984), pp. 147-64.

Goldenbaum, Ursula 'Leibniz as a Lutheran', In *Leibniz, Mysticism and Religion*. Edited by Allison Coudert et al., pp. 169-92.

- 'Leibniz's Three Strategies For Defending Christian Mysteries', *American Catholic Philosophical Quarterly* 76 (2002), 4, pp. 551-74.

Goldstine, Herman H. *A History of the Calculus of Variations from the 17th through the 19th Century*. Springer, New York, 1980.

Greenberg, Sean 'Leibniz Against Molinism. Freedom, Indifference, and the Nature of the Will' in *Leibniz. Nature and Freedom*. Edited by Donald Rutherford and J. A. Cover, pp. 217-33.

Grua, Gaston *La justice humaine selon Leibniz*. Presses Universitaires de France, Paris 1956.

Hacking, Ian *The Emergence of Probability*. A Philosophical Study of Early Ideas About Probability, Induction and Statistical Inference. Cambridge University Press, Cambridge 1975.

Hatfield, Gary 'The Cognitive Faculties', in *The Cambridge History of Seventeenth-Century Philosophy*. Edited by Daniel Garber & Michael Ayers, pp. 953-1002.

Heinekamp, Albert *Das Problem des Guten bei Leibniz*. Bouvier, Bonn 1969.

Heinekamp, Albert, Lenzen, Wolfgang & Schneider, Martin (Hrsg.), *Mathesis Rationis*. Festschrift für Heinrich Schepers. Nodus, Münster, 1990.

Heinekamp, Albert & Robinet, André (ed.) *Leibniz: le meilleur des mondes*. Table ronde organisée par le centre national de la recherche scientifique, Paris et la Gottfried-Wilhelm-Leibniz-Geschellschaft, Hannover, Domaine se Seillac (Loir-et-Cher), 7 Au 9 Juin 1990. Studia Leibnitiana, Sonderheft 21. Steiner, Stuttgart, 1992.

Hintikka, Jaakko 'Was Leibniz's Deity an Akrates?' In *Modern Modalities*. Studies of the History of Modal Theories from Medieval Nominalism to Logical Positivism, edited by Simo Knuuttila, pp. 85-108.

Hirsch, Eike Christian *Der Berühmte Herr Leibniz*. Eine Biographie. Beck, München, 2000.

Hochstrasser, Tim & Schröder, Peter (eds.) *Early Modern Natural Law Theories*. Contexts and Strategies in the Early Enlightenment. Kluwer, Dordrecht, 2003.

Honnefelder, L., Wood, R. & Dreyer, M. (eds.) *John Duns Scotus*. Metaphysics and Ethics. Brill, Leiden, 1996.

Hooker, Michael (ed.) *Leibniz: Critical and Interpretive Essays*. Manchester University Press, Manchester 1982.

Hostler, John *Leibniz's Moral Philosophy*. Duckworth, London 1975.

Hübener, Wolfgang 'Negotium irenicum – Leibniz's Bemühungen um die brandergurgische Union', In Hans Poser und Albert Heinekamp (Hrsg.), *Leibniz in Berlin*, pp. 120-69.

Jalabert, Jacques 'La psychologie de Leibniz. Ses caractères principaux.' *Revue philosophique de la France et de l'Étranger*, CXXXVI (1946), pp. 453-72.

James, Susan *Passion and Action*. The Emotions in Seventeenth-Century Philosophy. Oxford University Press, Oxford, 1999 (1997).

Jolley, Nicholas *Leibniz and Locke.* A Study of the New Essays on Human Understanding. Oxford University Press, Oxford 1986 (1984).

- 'Malebranche on the soul' in *Cambridge Companion to Malebranche*, ed. Steven Nadler, pp. 31-58.

Jolley, Nicholas (ed.) *Cambridge Companion to Leibniz*. Cambridge University Press, Cambridge 1998 (1995).

Kaehler, Klaus Erich 'Leibniz' metaphysiche Begründung der Möglichkeit rationaler und ästhetischer Antizipation', in *Antizipation in Kunst und Wissenschaft*, Hrsg. Friedrich Gaede & Constanze Perez, pp. 35-46.

Kantola, Ilkka, *Probability and Moral Uncertainty in Late Medieval and Early Modern Times*. Luther-Agricola-Society, Helsinki 1994.

Kauppi, Raili *Über die Leibnizsche Logik*. Mit besonderer Berücksichtigung des Problems der Intension und der Extension. Acta Philosophica Fennica, Fasc. XII. Societas Philosophica, Helsinki 1960.

Kline, Morris, *Mathematical Thought from Ancient to Modern Times* I-III. Oxford University Press, Oxfors, 1972.

Kneale, William & Kneale, Martha *The Development of Logic*. Oxford University Press, Oxford, 1962.

Kneale, Martha 'Leibniz and Spinoza on activity', in *Leibniz*. A collection of critical essays. Edited by Harry G. Frankfurt, pp. 215-237.

Knebel, Sven K. 'Leibniz, Middle Knowledge, and the Intricacies of World Design', *Studia Leibnitiana* 28 (1996), 2, pp. 199-210.

- 'Necessitas moralis ad optimum. Zum historischen Hintergrund der Wahl der besten aller möglichen Welten.' *Studia Leibnitiana* 23 (1991), pp. 3-24.

- *Wille, Würfel und Wahrscheinlichkeit*. Das System der Moralischen Notwendigkeit in der Jesuitenscholastik 1550-1700. Meiner, Hamburg 2000.

Knuuttila, Simo 'Duns Scotus and the Foundations of Logical Modalities', in *John Duns Scotus*. Metaphysics and Ethics. Eds. L. Honnefelder, R. Wood and M Dreyer, pp. 127-143.

- 'The Emergence of the Logic of Will in Medieval Thought', in *The Augustinian Tradition*, ed. Gareth B. Matthews, pp. 206-21.

- *Emotions in Ancient and Medieval Philosophy*. Oxford University Press, Oxford 2004.

- 'Old and New in Lebniz's View of Rational Decision', in *Meeting of the Minds*. The Relations Between Medieval and Classical Modern European Philosophy. Edited by Stephen F. Brown, pp. 333-46.

- 'Time and Creation in Augustine', in Cambridge Companion to Augustine, edited by Eleanore Stump and Norman Kretzmann, pp. 103-115.

Knuuttila, Simo (ed.) *Modern Modalities*. Studies of the History of Modal Theories from Medieval Nominalism to Logical Positivism. Kluwer, Dordrecht 1987.

Knuuttila, Simo & Holopainen, Taina 'Conditional Will and Conditional Norms in Medival Thought', *Synthese* 96 (1993), pp. 115-132.

Knuuttila, Simo & Niiniluoto, Ilkka (eds.) *Methods of Philosophy and the Histoy of Philosophy*. Proceedings of the Entretiens of Institute International de Philosophie, Helsinki, August 27-30, 1995. Acta Philosophica Fennica 61. Societas Philosophica Fennica, Helsinki, 1996.

Korkman, Petter, 'Voluntarism And Moral Obligation – Barbeyrac's Defence of Pufendorf Revisited', in *Early Modern Natural Law Theories*. Contexts and Strategies in the Early Enlightenment. Ed. by Tim Hochstrasser and Peter Schröder, pp. 195-225.

Koyré, Alexandre & Cohen, I. Bernard 'Newton & the Leibniz-Clarke Correspondence', *Archives Internationales d'Histoire des Sciences* 18, No 58-59 (1962), pp. 63-111.

Kretzmann, Norman et al. (eds.) *The Cambridge History of Later Medieval Philosophy*. From the Discovery of Aristotle to the Disintegration of Scholasticism 1100-1600. Cambridge University Press, Cambridge 1982.

- *The Metaphysics of Creation*. Aquinas's Natural Theology in Summa contra gentiles II. Oxford University Press, Oxford, 1999.

Kukkonen, Taneli 'Possible Worlds in the Tahâfut al-Falâsifa: Al-Ghazâlî on Creation and Contingency', *Journal of the History of Philosophy* 38 (2000), 3, pp. 329-47.

Kulstad, Mark A. *Leibniz: Apperception, consciousness and reflection*. München, Philosophia Verlag, 1991.

- 'Appetition in the Philosophy of Leibniz.' In *Mathesis rationis*, Hrsg. Albert Heinekamp, Wolfgang Lenzen & Martin Schneider, pp. 133-151.

Lavisse, Ernest *Louis XIV*. Histoire d'un grand règne 1643-1715. Édition établie par René Pillogret et Suzanne Pillogret. Laffont, Paris, 1989.

Lévy, J. Ph. *La Hiérarchie des Preuves dans le droit savant du moyen-age depuis la Renaissance du Droit Romain jusqu'à la fin du XIVe siècle*. Annales de l'université de Lyon, troisième série: droit, Fascicule 5, Sirey, Paris, 1939.

Loemker, Leroy E. *Struggle for Synthesis*. The Seventeenth Century Background of Leibniz's Synthesis of Order and Freedom. Harvard University Press, Cambridge, MA, 1972.

Maat, Jaap *Philosophical Languages in the Seventeenth Century: Dalgarno, Wilkins, Leibniz*. Kluwer, Dordrecht, 2004.

MacDonald, Scott (ed.) *Being and Goodness*. The Concept of the Good in Metaphysics and Philosophical Theology. Cornell University Press, Ithaca, 1991.

McRae, Robert 'Innate Ideas', in *Cartesian Studies*, edited by R. J. Butler, pp. 32-54.

- *Leibniz: Perception, Apperception, and Thought*. University of Toronto Press, Toronto, 1978 (1976).

- 'The Theory of Knowledge', in in *Cambridge Companion to Leibniz*, edited by Nicholas Jolley, pp. 176-198.

Manuel, Frank E & Manuel, Fritzie P. *Utopian Thought in the Western World*. Oxford University Press, Oxford 1979.

Marras, Cristina 'Leibniz and his metaphorical models: the "trutina rationis"', in Poser et al. (Hg.), *Nihil sine ratione*. Mensch, Natur und Technik im Wirken von G. W. Leibniz. Vorträge, 2. Teil, pp. 780-84.

Mates, Benson *The Philosophy of Leibniz*: *Metaphysics and Language*. Oxford University Press, New York, 1986.

Matthews, Gareth B. (ed.), *The Augustinian Tradition*. University of California Press, Berkeley, 1999.

Mele, Alfred R. 'Is Akratic Action Unfree?' *Philosophy and Phenomenological Research* XLVI (1986), 4, pp. 673-78.

De Melo, Wolfgang David Cirilo & Cussens, James, 'Leibniz on Estimating the Uncertain: An English Translation of De incerti aestimatione with Commentary', *The Leibniz Review* 14 (2004), pp. 31-41.

Mercer, Christia, *Leibniz's Metaphysics*. Its Origins and Development. Cambridge University Press, Cambridge 2001.

Milkov, 'A New Interpretation of Leibniz's Concept of characteristica universalis', in Breger et al. (Hg.), *Einheit in der Vielheit*, Vorträge, 2. Teil, pp. 605-14.

Miller, Jon & Inwood, Brad (eds.) *Hellenistic and Early Modern Philosophy*. Cambridge University Press, Cambridge 2003.

Miller, Samuel J. T. & Spielman, John, P. 'Cristobal Rojas y Spinola, cameralist and irenicist', *Transactions of the American Philosophical Society*, New Series 52, part. 5.

Mugnai, Massimo 'Review of Robert Merrihew Adams's Leibniz: Determinist, Theist, Idealist' *Leibniz Society Review* 6, pp. 78-88.

Münzenmayer, 'Der Calculus Situs und die Grundlagen der Geometrie bei Leibniz', *Studia Leibnitiana* XI (1979), pp. 274-300.

Murray, Michael J. 'Intellect, Will and Freedom: Leibniz and his Precursors', *Leibniz Society Review* 6 (1996), pp. 25-59.

- 'Pre-Leibnizian Moral Necessity', *The Leibniz Review* 14 (2004), pp. 1-28.

- 'Spontaneity and Freedom', in *Leibniz. Nature and Freedom*. Edited by Donald Rutherford and J. A. Cover, pp. 194-216.

Naaman Zauderer, Noa, 'Rethinking Leibniz's Notions of Justice, Love and Human Motives', in Breger et al. (Hg.), *Einheit in der Vielheit*, Vorträge, 2. Teil, pp. 671-76.

Nadler, Steven (ed.) *The Cambridge Companion to Malebranche*. Cambridge University Press, 2000.

Naert, Émilienne, *Mémoire et conscience de soi selon Leibniz*. Vrin, Paris, 1961.

- *La pensée politique de Leibniz*. Presses universitaires de France, Paris 1964.

Nagel, Thomas 'Aristotle on Eudaimonia', in *Essays on Aristotle's Ethics*, edited by Amélie Oksenberg Rorty, pp. 252-59.

Nicolas, Juan A. 'La rationalité morale du monde chez Leibniz', in *Leibniz: le meilleur des mondes*, Hg. Albert Heinekamp, pp. 163-168.

Niiniluoto, Ilkka 'Scepticism, Fallibilism, and Verisimilitude', in *Ancient Scepticism and the Sceptical Tradition*. Edited by Juha Sihvola, pp. 145-169.

Olaso, Ezequeil de 'Leibniz et l'art de disputer', In Akten des II. Internationalen Leibniz-Kongresses, Bd. IV. *Studia Leibnitiana suppplementa* 15. Steiner, Wiesbaden 1975.

Paden, Robert, 'Hobbesian Deliberators', *Hobbes Studies* VII (1994).

Parkinson, G. H. R. *Leibniz on Human Freedom*. *Studia Leibnitiana, Sonderheft* 2. Steiner, Wiesbaden 1970.

- *Logic and Reality in Leibniz's Metaphysics*. Oxford University Press, Oxford, 1965.

- 'Philosophy and Logic', in *Cambridge Companion to Leibniz*, ed. Nicholas Jolley, pp. 199-223.

Parmentier, Marc 'Concepts juridiques et probabilistes chez Leibniz', *Revue d'histoire des sciences* 44 (1993), pp. 439-85.

Peckhaus, Volker *Logik, Mathesis universalis und allgemeine Wissenschaft: Leibniz und die Wiederentdeckung der formalen Logik im 19. Jahrhundert*. Akademie, Berlin, 1996.

Van Peursen, Cornelius-Anthonie, 'Ars inveniendi bei Leibniz', *Studia Leibnitiana* 18 (1986), pp. 183-194.

Phemister, Pauline, 'Progress and Perfection of World and Individual in Leibniz's Philosophy, 1694-97', in Breger et al. (Hg.), *Einheit in der Vielheit*, Vorträge, 2. Teil, pp. 805-12.

Piro, Francesco 'Leibniz and Ethics: the Years 1669-72', in *The Young Leibniz and his philosophy (1646-76)*, ed. Stuart Brown, pp. 147-67.

Poser, Hans et al. (Hg.), *Nihil sine ratione*. Mensch, Natur und Technik im Wirken von G. W. Leibniz I-III & Nachtragsband. VII. Internationaler Leibniz-Kongress, Berlin, 10.-14. 9. 2001. Gottfried-Wilhelm-Leibniz-Gesellschaft, Hannover 2002.

Poser, Hans & Heinekamp, Albert (Hrsg.), *Leibniz in Berlin*. Steiner, Stuttgart, 1990.

Puryear, Stephen M. 'Was Leibniz Confused About Confusion?', *Leibniz Review* 15 (2005), pp. 95-124.

Reichenbach, Bruce R. 'Must God Create the Best Possible World?' *International Philosophy Quarterly* 19 (1979), pp. 203-12.

Rescher, Nicholas 'Contingentia mundi: Leibniz on the World's Contingency', in Rescher, *On Leibniz*, pp. 45-67.

- *G. W. Leibniz's Monadology*. An Edition for Students. Routledge, London, 1991.

- *Leibniz*. An Introduction to his Philosophy. Blackwell, Oxford 1979.

- 'Leibniz, Keynes, and the Rabbis on a Problem of Distributive Justice', *Journal of Philosophy* 86 (1989), pp. 337-352.

- *Leibniz's Metaphysics of Nature*. Reidel, Dordrecht, 1981.

- 'Leibniz On Possible Worlds', *Studia Leibnitiana* 28 (1996), pp. 129-62.

- 'Logical difficulties in Leibniz's metaphysics', in *Gottfried Wilhelm Leibniz:* Critical Asessments II, ed. by R. S. Woolhouse, pp. 176-86.

- *On Leibniz*. University of Pittsburgh Press, Pittsburgh 2003.

- *The Philosophy of Leibniz*. Prentice-Hall, Englewood Cliffs, NJ, 1967.

Riley, Patrick *Leibniz's Universal Jurisprudence*. Justice as the Charity of the Wise. Harvard University Press, Cambridge, MA, 1996.

Rohrbasser, Jean-Marc & Véron, Jacques 'Leibniz et la mortalité', *Population* 53 (1998), pp. 29-44.

Roncaglia, Gino 'Cum Deus Calculat - God's Evaluation of Possible Worlds and Logical Calculus', *Topoi* 9 (1990), pp. 83-90.

Rorty, Amélie Oksenberg (ed.) *Essays on Aristotle's Ethics*. University of California Press, Berkeley, 1980.

Ross, George MacDonald 'Remnant and Bennett's "New Essays": A Reply', *The Locke Newsletter* 14 (1983), pp. 59–78.

Rutherford, Donald *Leibniz and the Rational Order of Nature*. Cambridge University Press, Cambridge 1995.

- 'Leibniz on Spontainety', in *Leibniz. Nature and Freedom*. Edited by Donald Rutherford and J. A. Cover, pp. 156-80.

- 'Malebranche's Theodicy', in *Cambridge Companion to Malebranche*, ed. Steven Nadler, pp. 165-189.

- 'Leibniz's "On Generosity", with English translation', *The Leibniz Review* 12 (2002), pp. 15-21.

- 'Patience sans Espérance: Leibniz critique of Stoicism', in *Hellenistic and Early Modern Philosophy*, ed. by Jon Miller & Brad Inwood, pp. 62-89.

Rutherford, Donald and Cover, J. A. (eds.) *Leibniz. Nature and Freedom*. Oxford University Press, Oxford, 2005.

Saastamoinen, Kari *The Morality Of The Fallen Man*. Societas Historica Finlandiae, Helsinki, 1995.

Scheffler, Samuel 'Leibniz on Personal Identity and Moral Personality', *Studia Leibnitiana* 8 (1976), 2, pp. 219-40.

Schepers, Heinrich 'Leibniz' Disputationen "De Conditionibus: Ansätze zu einer juristischen Aussagenlogik"', in Akten des II. Internationalen Leibniz-Kongresses, Hannover, 17.-22. 6. 1972, Bd. IV. *Studia Leibnitiana Supplementa* 15. Steiner, Wiesbaden 1975.

- 'Non alter, sed etiam Leibnitinius. Reply to Dascal's Review Ex pluribus unum?', *The Leibniz Review* 14 (2004), pp. 117-35.

Schneewind, J. B. *The Invention of Autonomy*. A History of Modern Moral Philosophy. Cambridge University Press, Cambridge 1988.

Schnath, Georg *Geschiche Hannovers im Zeitalter der neunten Kur und der englischen Sukzession* 1674-1714, Bd. 3: 1698-1714. Lax, Hildesheim 1978.

Schneider, Ivo 'Leibniz on the Probable', in *Mathematical Perspectives*. Essays on Mathematics and Its Historical Development. Edited by Joseph W. Dauben, pp. 201-219.

Schüssler, Rudolf *Moral im Zweifel*. Bd. I. Mentis, Paderborn, 2003.

Seager, William 'The Principle of Continuity and the Evaluation of Theories', *Dialogue*, 20 (1981), pp. 485-95.

Seidler, Michael J. 'Freedom and Moral Therapy in Leibniz', *Studia Leibnitiana* 17 (1985), 1, pp. 15-35.

Shields, Christopher 'Leibniz's Doctrine of the Striving Possibilities', *Journal of the History of Philosophy* 24 (1986), pp. 343-57.

Sheynin, O. B. 'Early History of the Theory of Probability', *Archive for History of Exact Sciences* 17, 1977.

Sihvola, Juha (ed.) *Ancient Scepticism and the Sceptical Tradition*. Acta Philosophica Fennica, Fasc. 66, Societas philosophica Fennica, Helsinki 2000.

Sleigh, R. C., Jr. *Leibniz & Arnauld*. A Commentary on Their Correspondence. Yale University Press, New Haven, 1990.

- 'Leibniz on Freedom and Necessity: Critical Notice of Robert Adams, Leibniz: Determinist, Theist, and Idealist.' *The Philosophical Review*, 108 (1999), pp. 245-77.

- 'Leibniz on the Two Great Principles of all our Reasonings', in *Gottfried Wilhelm Leibniz: Critical Assessments* I, ed. R. S. Woolhouse, pp. 31-57.

Sommerville, J. P. 'Absolutism and royalism', in *The Cambridge History of Political Thought 1450-1700*, ed. J. H. Burns and Mark Goldie, pp. 347-73.

Stein, Erwin and Wiechmann, Karin 'New Insight Into the Beginning of Optimization and Variational Calculus in the 17th Century', in Poser et al. (Hg.), *Nihil sine ratione*. Mensch, Natur und Technik im Wirken von G. W. Leibniz, herausgegeben von Hans Poser et al., Vorträge, 3. Teil, pp. 1229-38.

Stocker, Michael *Plural and Conflicting Values*. Oxford University Press, Oxford 1990.

Stump, Eleanor and Kretzmann, Norman (eds.), *The Cambridge Companion to Augustine*. Cambridge University Press, Cambridge 2001.

Suttner, Alex *Göttliche Maschinen*. Die Automaten für Lebendiges bei Descartes, Leibniz, La Mettrie und Kant. Athenäum, Frankfurt am Main, 1988.

Thiel, Udo 'Personal Identity', in *The Cambridge History of Seventeenth-Century Philosophy*, ed. Daniel Garber & Michael Ayers, pp. 868-912.

Vailati, Ezio *Leibniz and Clarke*. A Study of their correspondence. Oxford University Press, New York, 1997.

- 'Leibniz on Locke on Weakness of Will', *Journal of the History of Philosophy* 28 (1990), 2, pp. 213-228.

Vanderveken, Daniel (ed.) *Logic, Thought and Action*. Springer, Dordrecht, 2005.

Voisé, Waldemar 'La mathématique politique et l'histoire raisonnée dans le Specimen Demonstrationum Politicarum de Leibniz', In *Leibniz 1646-1716*. Aspects de l'homme et de l'oeuvre. Ouvrage publié avec le concours du Centre national de la recherche scientifique, Aubier-Montaigne, Paris 1968, pp. 61-67.

Watson, Gary 'Skepticism About Weakness Of Will', *Philosophical Review* 86 (1977), pp. 316-339.

White, James F. *Introduction To Christian Worship*. 3rd edition. Abingdon, Nashville, 2000 (1980).

Wiggins, David 'Sufficient reason: a principle in diverse guises, both ancient and modern', in *Methods of Philosophy and the Histoy of Philosophy*. Proceedings of the Entretiens of Institute International de Philosophie, Helsinki, August 27-30, 1995, ed. Simo Knuuttila & Ilkka Niiniluoto, pp. 117-32.

Wilson, Catharine 'Plenitude and Compossibility in Leibniz', *The Leibniz Review* 10 (2000), pp. 1-20.

Wolter, Allan B. *The Philosophical Theology of John Duns Scotus*. Cornell University Press, Ithaca, 1990.

Woolhouse, R. S. (ed.) *Gottfried Wilhelm Leibniz*. Critical Asessments I-IV. Routledge, London 1994.

- (ed.) *Leibniz's New System (1695)*. Olschki , Firenze, 1996.

Zupko, Jack *John Buridan*. Portrait of a Fourteeth-Century Arts Master. University of Notre Dame Press, Indiana 2003.