

Malthus and Ricardo on Economic Methodology

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Introduction

Our aims are to contribute to a better understanding of Thomas Robert Malthus's and David Ricardo's methodologies and to study the methodology of two great economists, both in its interaction with their positive work and with each other's criticism, in the context of "the most important literary correspondence in the whole development of Political Economy" (Keynes [1933/1972-90]). The controversy between Malthus and Ricardo has not been explored in depth to date and its most exciting dimension, the methodological discussions, has never been made the subject of a specific study.¹ There are several reasons for this: the primary sources have not been available for very long; interest in methodology has not been prominent among historians of economic thought until recently; philosophers of science have not had enough patience to search for fragments of methodological considerations embedded in the pamphlets and letters of the scientists in the past. In this article, we provide a reconstruction of Malthus's and Ricardo's methodologies, and we conclude by weighing the differences and similarities between them. In another paper, we examine the impact of criticism in the controversy (Cremaschi and Dascal, forthcoming).

Reconstruction of Malthus's Methodology

Newtonianism

We now have available detailed information concerning the study of mathematics and natural philosophy that the young Thomas Robert Malthus carried out while he was a student at Cambridge (see James 1979, 25-30). At the beginning of his first year, in a letter to his father, he mentions "MacLaurin, Newton, and Keill's Physics. . . [and] Duncan's Logick" and adds that his "chief study is mathematics" (James 1979,25). In another letter, he complains that the "plan of mathematical and philosophical reading pursued at

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¹ Studies of the controversy include J. Hollander [1910/1968]; Keynes [1933/1972]; Pancoast 1943; Paglin [1961] 1973; Sowell 1963; Moore 1966; Porta 1978; Dorfman 1989.

Cambridge is perhaps too much confined to speculation,” that “no lectures of any consequence in algebra and fluxions” are offered, “and yet a man would find himself very deficient in going through the branches of natural philosophy and Newton’s *Principia*, without a decent knowledge of both” (James 1979,29). These letters, combined with what we know of the intellectual climate in Cambridge at the time, show that the author of the polemical pamphlet of 1798 was trained in mathematics and had acquired firsthand knowledge of Newton’s *Principia* using Colin Maclaurin’s *Account* as a companion. In Donald Winch’s words, although Malthus’s education was aimed at preparing him for a career in the Church, “this was tantamount, in the circumstances of the day, to producing a Newtonian natural and moral philosopher” (Winch 1987, 18; James 1979, chap. 1; Waterman 1991a, 82-95).

As a consequence, mention of Newton made by Malthus at several places should be taken seriously. For example, in *On Political Economy* (1824), he repeats Dugald Stewart’s description of Smith as “the Newton” of political economy (1986,7:257). In the first edition of the *Essay on the Principle of Population*,² he repeats the familiar opposition between the “consistent theory of Newton” and “the wild and eccentric hypotheses of Descartes,” where the latter are assumed to be an example of the “old mode of philosophizing,” based on the abhorred “conjectures” and on making “facts bend to systems, instead of establishing systems upon facts” (1986, 159); the new mode of philosophizing, on the contrary, is based on “patient investigation, and well authenticated proofs” (1: 60n.; see also 1: 90).³ An instance of the application of the Newtonian method to moral subjects was provided in David Hume’s *Essays*. There is no proof that in 1798 Malthus had read the just-published first volume of Dugald Stewart’s *Elements* (1792). He certainly became acquainted with that work later, and in the *Principles* (1820), at various points he paraphrases Dugald Stewart’s considerations.

Paley’s Theological Utilitarianism

Another major influence on Malthus’s work was the legacy of the Cambridge *via media* (see Waterman 1991b), whose leading figure was William Paley, the proponent of a version of theological utilitarianism that makes the moral quality of actions and states of affairs depend on the total quantity of “happiness” (understood in terms of physical pleasure) they are able to bring about (Paley [1785] 1786, 18). Paley’s *Principles of Moral and Political Philosophy* provide both the basis for Malthus’s understanding of key notions, such as that of “laws of nature” (see 194, 203) and for his interest in population. Paley discussed the causes of population growth with a view toward working out policies favoring that growth. This concern did not derive from familiar considerations of national power, but from the theological utilitarian criterion

² We will refer, in what follows, to the 1798 edition as “the *Essay*,” while the 1803 and following editions will be called “the second *Essay*.”

³ Compare Smith [1795] 1980,6:61-76. On Adam Smith’s Newtonianism, see Cremaschi 1984, 11-72; 1989.85-87.

of the total sum of happiness. Increase in population implies growth in total, if not in average, happiness. He believed that the “final view of all rational politics is to produce the greatest quantity of happiness” and that “the quantity of happiness produced in any given district, so far depends upon the number of inhabitants, that... the collective happiness will be nearly in exact proportion of the numbers” (587). Yet, in his *Natural Theology* (1802), he accepted Malthus’s population theory and declared population growth to be a cause of “civil evil,” that is, “poverty, which, necessarily, imposes labour, servitude, restraint” ([1802] 1970, 540). Finally, Paley’s *Principles* were a source of Malthus’s “philosophical Whiggism.” This had liberal implications, such as love of toleration and of “mild” government, opposition to slave trade, and even a Rousseauian distrust of property whose “paradoxical and unnatural” character was assumed to be apparent ([1785] 1786, 92). It also had conservative implications, including a defense of existing property rights, on considerations of expediency if not of justice (see 92-93); a typically “country” Whig pro-agrarian and pro-rent bias (193, 6 11-12), based on strictly political, as contrasted with economic and social, considerations; and an acute awareness of the costs of political change, leading to a choice for preservation of the British Constitution as an end whose desirability outweighed that of other desirable kinds of social change (book 6, chaps. 2 and 3).

Against Conjectures

In the *Essay*, the rejection of “mere conjectures” or of “suppositions, the probable realization of which cannot be inferred upon any just philosophical ground” (1986, 1: 8), is announced at the very beginning. Two postulates are introduced concerning laws of human nature (the necessity of food and the inability to eliminate the sexual drive), and consequences are deduced from them, to be subsequently confirmed by “experience, the true source and foundation of all knowledge” (Malthus [1798] 1986, 1: 10). The structure of the *Essay*, thus, follows the blueprint of Hume’s “Of the Balance of Trade,” which is also based on postulates from which phenomena are deduced, to be later confirmed by “experience” (see Waterman 1988).

The statement of an “acknowledged truth in philosophy,” namely, that “a just theory will always be confirmed by experiment” ([1798] 1986, 1: 6-7) sounds like a paraphrase of Isaac Newton’s fourth *Regula Philosophandi*, the most markedly anti-system and pro-experience of Newton’s methodological statement.⁴ An important qualification is that “So much friction” occurs in practice that almost no theory can “be pronounced just, that has not stood the test of experience” (1:7). Malthus’s preoccupation is that no “untried theory” be advanced even as probable “till the arguments against it, have been maturely weighed, and clearly and consistently refuted” (1:7).

⁴ See Newton [1726] 1972, 255. The fourth rule was granted a basic role by Hume and the Scottish philosophers because of its “anti-conjectural” implications, as argued in Force 1987, 180-87.

The Predicament of the Moral Sciences

It is unclear whether Malthus, as early as 1798, was aware of the peculiar difficulties posed by the moral sciences. It was a point discussed at length by the Scottish philosophers and, more recently, by Dugald Stewart (1854, 1:239-35; 2:19-20). For Malthus this was to become a major concern, but it may have not been foreign even to the first *Essay*. A belief in the non-mechanistic character of the human world was ascribed to Malthus by Würigler (1957, 194-200). But what Malthus contends in the *Principles* is that social studies should be granted a privileged status vis-h-vis the “study of the laws of nature,” in so far as their subject matter is more directly accessible in principle; and yet, the study of “the laws which regulate the movements of human society” is made less easy by obstacles unknown to the natural science.⁵ The difficulty lies in the fact that human actions are prompted by motives not easily reducible to certain and regular causes. The obstacle is no longer located, as by Hume earlier, in the difficulty of “experiment” by means of introspection; the obstacle for Malthus lies in the impossibility of reducing human needs and tastes to mathematical figures. This will be the focal point of endless disagreements. Ricardo complained in this connection about Malthus’s “unscientific” attitude (letter to Mill, 1 January 1821; Ricardo 1951-73, 8:331). But Malthus’s stance (pace Paglin [1961] 1973, 21) had little to do with Burke’s Counter Enlightenment, being instead residue from the Scottish legacy (compare Stewart 1854, vol. 2, chap. 4; 1: 2). The sources of Malthus’s caution with regard to the “scientific” treatment of moral and political phenomena are best revealed in a passage in the second *Essay* in which Hume’s reminder that “of all sciences there is none where first appearances are more deceitful than in politics” is repeated (Malthus [1803] 1989, 2: 185). The application Malthus makes of Hume’s warning leans toward a defense of theory against so-called practice. The danger Malthus sees is that of incautiously transferring limited experience, like that one derived from the management of a small farm, to society as a whole (2:185). In the same work, Malthus contributes to what in the course of the nineteenth century was bound to become an endless complaint about the backwardness of “the science of moral and political philosophy” as contrasted with “physical science.” But he believes that lessons can be drawn from “the brilliant career of physical discovery,” so that social science and, as a consequence, the “improvement of human society,” will “partake” in the success of natural science (2:203). So Malthus’s attitude seems to be that of a wholehearted admirer of Newtonian natural science, committed to the project of edifying a science of morals and politics, but fully aware-in 1820 at least-of the difficulty of the task. With this broad picture in mind, we may now examine the discussion of the predicament of the moral sciences in the introduction to the *Principles*.

Malthus declares political economy to be closer “to the science of morals and politics than to that of mathematics” (1: 2). Political economy is less precise than mathematics because the “practical results” of

⁵ Here Malthus is echoing Dugald Stewart (1854, 1:221-53).

its “propositions” depend upon “So variable a being as man” and “So variable a compound as the soil” (1: 1). An intrinsic quality of these two entities, their variability, makes the identification of political economy with mathematics impossible (p.uce the author of the 1798 *Essay*); see also Malthus [1820/1989, 1:355]. Thus, the kind of proofs which can be afforded cannot compete in certainty with “those which relate to figure and number” (1: 1).⁶

Yet Malthus is far from defending an unqualified methodological dualism. In fact he understands “the study of the laws of nature . . . in all its branches” as including both the “physical laws,” even those “by which the more distant parts of the universe are governed,” and “the laws which regulate the movements of human society,” and on principle he grants the latter the same status as the former. What makes a difference is the fact that they are “continually modified by human interference” (1 :13). This results, in turn, from the action of other laws of nature—those governing “human nature,” for example, the passions of men, their reason, and their self-interest. That is, while inquiring into “human society,” as contrasted with the more distant parts of the universe, we constantly face “the operations of that circle of causes and effects... which are acting and re-acting on each other” (1: 16). Thus, Malthus contrasts “great general principles” that may be said to “partake... of the certainty of the stricter sciences,” with other propositions of political economy that in no way can be said to share such a certainty and “absolutely require limitations and exceptions” (1: 8). Also, exceptions to the general principles, even if “of the most rare occurrence,” must be admitted. In fact, those principles “resemble... the great general rules in morals and politics founded upon the known passions and propensities of human nature” (1: 1-2).

Beyond the introduction, a few scattered remarks refer to the same concern: the measurement of value cannot be as precise and certain as the measurement of length and weight. In fact, neither “the object to be measured, nor the instrument of measurement comes within the pale of that certainty which belongs to stricter sciences” (2: 141-42). In another passage, Malthus adds that what matters is not only “the physical qualities of the materials which are acted upon” (1 :38 l), and he suggests that it is perhaps because they confine their attention to the latter that his opponents seem to confound commodities dealt with by political economy with figures and numbers (1:355). What matters is “the moral as well as the physical qualities of the agents” (1:38 1). In the example given by Malthus, customary patterns of work and consumption make the same market mechanisms yield opposing consequences in different countries such as England, Ireland, or Mexico (1: 375-401).

One further aspect of the peculiarity of political economy vis-&-vis the more rigorous sciences is a greater degree of complexity in its subject matter; that complexity depends on the existence of feedback or on a “circle of causes and effects... which are acting and reacting on each other” (1: 16; compare 1: 249). When

⁶ See also Stigler 1952, 191-94, on the role of the polemics with Godwin in convincing Malthus of the impossibility of directly applying arithmetical ratios to the real world.

read at the end of the twentieth century, after the “stricter sciences” have long been tackling precisely those circles of cause and effect, such a statement sounds prophetic.

Against Oversimplification

Malthus’s fear of excessive simplification, in light of what we have said so far, may be interpreted as a legacy of the Scottish hatred of *esprit de système* and of the *Cambridge via media*. Malthus’s attitude is not a sort of historicist contempt for theory. In the introduction to the *Principles*, Malthus singles out two opposing sources of error in political economy: first, “a precipitate attempt to simplify and generalize” (Malthus [1820] 1989, 1: 6); second, the temptation to mistake “appearances, which are merely co-existent and incidental... for causes” (1: 21). Against the tendency toward premature generalization, which Malthus acknowledges as prevailing at the time he is writing, he insists on the necessity to be prepared “to acknowledge the operation of more causes than one in the production of particular effects” (1: 6). It is precisely Ricardo’s unwillingness to take multicausality into account that Malthus will criticize on more than one occasion (letters to Ricardo, 20 June 1811, 23 February 1812, 9 October 1814; in Ricardo 1951-73, 6: 28-29, 82, 139-140). Malthus also insists on the need to admit “limitations and exceptions” to several propositions of political economy (Malthus [1820] 1989, 1: 8; compare 13). Exceptions, Malthus remarks in *On Political Economy*, are to be admitted in any classification; hence, this is not a peculiar feature of political economy as such ([1824] 1986, 7:262). “The sweeping generalizations,” Malthus concludes, appear “to be fatal to all clear explanation of the means by which the final result is attained” (7: 267). For him, this rule holds for “the watchmaker, the anatomist, and the natural philosopher” (7: 267). He asks why “it should be different with the political economist” (7: 267). The tendency to oversimplification goes hand in hand with an uncritical identification of the moral sciences with mathematics. The aforementioned passage of the *Principles*, where Say, Mill, and Ricardo are charged with having “considered commodities as if they were so many mathematical figures or arithmetical characters” (Malthus [1820] 1989, 1:355), matches another revealing passage from *On Political Economy*, in which what he calls “the new school” is compared with physiocracy ([1824] 1986, 7: 297). The opposing error, that of mistaking appearances for causes, Malthus ascribes to “practical men,” and also to Smith on particular points (for example, to infer, from the low price of wheat during the first half of the eighteenth century, that wheat “is generally cheaper in rich than in poor countries”) ([1820] 1989, 1:21). This mistake is even more damaging than the former, in so far as it leads to a theory which is “both complex and incorrect” ([1820] 1989, 1:21).

Malthus views his own approach as escaping both errors by threading a kind of middle way between dogmatism and hyper-empiricism (see Wrigley 1986, 35; Würigler 1957, 197). This idea of a middle way—a legacy of his Cambridge education—is a sort of obsession for Malthus, showing up in contexts as different as methodology and positive theories, such as the theory of capital or that of consumption. We will return to

this notion when dealing with the doctrine of “proportions.” Let us discuss now a consequence of Malthus’s criticism of oversimplification, namely, his view of the relationship between theory and experience.

Theory, Experience, and Holism

Besides the two main causes of error mentioned in the introduction, there is a third cause (a consequence of the first), namely, the unwillingness to bring theories to the test of experience. Malthus seems to be suggesting that the Ricardians stick to their own theories even if they prove “inconsistent with general experience” ([1820] 1989, 1:10). Yet, that inconsistency is proof that these theories are “either radically false, or essentially incomplete” (1 :1 1). Malthus takes a stance on a question that will be debated at length by twentieth-century philosophers of science: he defends a holistic view of the empirical constraints posed by facts on theories. An “isolated fact” cannot refute a theory, insofar as a “consistent theory, which would account for the great mass of phenomena observable” should not be thought to be “invalidated by a few discordant appearances, the reality and the bearings of which there might not have been an opportunity of fully examining” (1: 10). Malthus’s requirement is that the principles of political economy “be carefully founded on an experience sufficiently extended” (1 :518), and the extension of the required experience is what marks the difference between his middle way and the “practical” attitude (see 1986, 755). His position blends a vindication of theory against untutored empiricism with a reaction to intemperate theorizing which overlooks facts.⁷

It is worth noting that Malthus also takes an “intermediate” position between Ricardo and the latter’s inductivist critics, William Whewell and Richard Jones. After more than a decade of controversy with Ricardo, Malthus in a letter to Whewell (31 May 1831) defends him in the name of the rights of theoretical generalizations against Jones’s criticism, manifesting his fear that “the tide is setting too strong against” Ricardo (De Marchi and Sturges 1973,391).

Laws of Nature

In the first *Essay* (chaps. 1 and 9), Malthus’s basic postulates are said to express two of the “fixed laws of our nature” ([1798] 1986, 1: 8, 59). Human nature is a part of Nature created by God, who has imposed on it “general laws” that are “fixed.” God may interrupt by miracles those laws, which he has freely chosen to confer upon nature. In other words, Malthus has a voluntarist conception, derived from Newton, of the laws of nature (see Waterman 1991a, 33; compare Heimann 1978; Cremaschi 1992, 61-62). Thus, laws of nature are “laws of God.” An expression apparently synonymous to “law of nature” is “law of necessity”

⁷ Compare with Dugald Stewart regarding the misapplication of the words “experience” and “induction” in political economy (Stewart 1854, vol. 2, chap. 4).

([17981 1986, 1: 9, 13, 48). In chapter 1 of the second *Essay*, the mention of the two postulates expressing basic “laws of nature” is omitted, while the “law of necessity” is still described as being “a law of nature” (Malthus [18031 1989, 1 :lo), and occasional mention, with less emphasis, is made elsewhere in the book of “the laws of nature” (2:87-88).

In the *Principles*, besides “general laws” and the usual “propositions of political economy,” occasional mention is also made of the “laws of nature.” This expression shows up in connection with the relationship between human society and its physical environment, the focus of which is rent (1: 147, 229). The laws of nature here are the laws of physical nature (as contrasted with human society); in “the production of necessaries alone,” as contrasted with all other productions, “the laws of nature are constantly at work to regulate their exchangeable value according to their value in use” (1: 147-48). Also “the separation of rents... is a law as invariable as the action of the principle of gravity,” and rent “is placed by the laws of nature on the land, by whomsoever possessed” (1: 155; compare 1:229). Thus, as a result of the “fertility of the soil... the great laws of nature have provided for the leisure or personal services of a certain portion of society” (1: 463). These words may be read as a mark of utter moral insensibility, and indeed would seem to confirm the Marxist cliché of a “reactionary” Malthus, if the expression “laws of nature” is anachronistically read in a natural law sense. What Marx and many after him did not realize is that Malthus was a Paley-utilitarian and a Newtonian theological voluntarist. Accordingly, he believed that general laws may cause partial evil that may in its turn be mitigated by the effects of other general laws but that may not be simply explained away by the divine origin of nature. Indeed, Malthus was a political Whig and he did not share Alexander Pope’s cosmic Toryism (according to which “whatever is, is right”); moreover, he was obsessed, no less than Paley was, by the problem of theodicy. For Malthus moral goodness was not an inherent quality of the laws of nature but was tantamount to the sum of happiness they were able to bring about. Thus, his defense of the status quo, of existing property arrangements, of rent, and even his nastiest positions on the relief of the poor, while he still held to the strong version of his principle of population, were justified in terms of a sum of happiness supposedly outweighing a sum of evils.

Notwithstanding the fact that talk of “natural laws” was the main target of Jeremy Bentham’s scorn, Ricardo seems to have understood more or less what Malthus meant. On one occasion, while professing the belief that talk of “laws of nature” is mere nonsense, he gave a charitable reading of a proposition couched by Malthus in terms of “laws of nature” by paraphrasing it in terms of a sum of happiness (letter to Francis Place, 9 September 1821; Ricardo 1951-73, 951-52). In short, in the light of the distinction between general principles and usual propositions of political economy, in the *Principles* Malthus may be said to be drawing a distinction between three kinds of scientific laws: first, the usual propositions of political economy, which are only probable and always admit exceptions; second, the most general principles, which may be considered as firmly established, being based on the most basic human passions; third, the fixed laws of nature, which admit no exceptions, being based on undeniable evidence concerning the nature of

man and of the physical environment (only the principle of population and the theory of rent fall under the second heading and possibly the two unmentioned “postulates” fall under the third heading). Concerning laws of the third kind, counterevidence is dealt with without abandoning the principle and without permitting exceptions but rather by singling out causes hindering the action of the tendency, supposed to be at work (see Malthus [1820] 1989, 1: 11). In the other cases, counterevidence may be handled either by recalling the merely probabilistic character of the law or by allowing exceptions.

Analogy

The topic of analogy is a crucial element of the Newtonian methodological legacy (see Gilardi 1988). In both the first *Essay* and the *Principles*, analogy is appealed to, without much discussion, as a criterion intended to rule out extravagant hypotheses. In the *Essay*, Malthus appeals to analogy against Jean-Antoine-Nicolas Condorcet. He argues that it is “unphilosophical to expect any specific event that was not indicated by some kind of analogy in the past.” Thus, as man has discovered many of the laws of nature, it is sensible to hope that “he will discover many more”; however, he argues, “no analogy seems to indicate that he will discover a sixth sense” ([1798] 1986, 1: 86). In the *Principles*, Malthus appeals to the rule of analogy in the context of the familiar iatro-political simile (or, the analogy between the human body and the body politic). In support of laissez-faire, he suggests that as the “ablest physicians are... the most inclined to trust to the healing power of nature, so governments should refrain from intervening in their subjects’ business unless it has been proved with overwhelming evidence that they should do so” ([1820] 1989, 1: 20). At another point, the simile is recalled in order to limit a conclusion that may be drawn from Malthus’s principle of population. By stressing the importance of what happens in the course of intervals between two permanent states, as when “the human body had been subjected to a very powerful stimulus, we should surely be cautious not to remove it too suddenly.” He goes on to say, if the country had been subjected to the excitement of excessive expenditure, “a great and sudden contraction of consumption” would be an unwise remedy (1: 520-21).

Proportions

The claim of a decisive role for proportion (as opposed to absolute magnitudes) in political economy is the most intriguing aspect of Malthus’s methodology. His taste for “proportions” has not gone unnoticed (Empson 1837, 476), and it has been suggested that he was anticipating the concept of optimality (Pullen 1982; Costabile and Rowthorn 1985). The main theoretical claim of Malthus’s first *Essay* is couched in a mathematical framework. The law of population states: “Population, when unchecked, increases in geometrical ratio. Subsistence increases only in an arithmetical ratio” (Malthus [1798] 1986, 1: 9). The law

is presented as a self-evident truth in ideal cases and is made plausible by consideration of the reproductive power that each generation will display in turn and that will contribute to further population growth. In the second *Essay*, Malthus tries to add some empirical corroboration. After providing data on population growth in North America (which, as has often been noted, were misinterpreted, because immigration was overlooked), he concludes that these data suggest that “population . . . goes on doubling itself every twenty five years, or increases in a geometrical ratio” ([1803] 1989, 1:12). The second part of the law is based on the decreasing productivity of cultivated land. Again, it has often been noted that empirical descriptions are flawed because they do not take into account the actual or virtual effects of technical improvements on the productivity of the soil. Indeed, Malthus contends that “the means of subsistence, under circumstances the most favourable to human industry, could not possibly be made to increase faster than in an arithmetical ratio” (1: 15; see also [1798] 1986, 1: 14-17).

Regardless of these differences, in both formulations the problem is similar to the composition of forces in dynamics. A third factor, “the strong law of necessity,” appears, “acting as a check upon the greater power” of population, so that the rates of increase of the two factors be kept equal ([1803] 1989, 1: 15; see also [1798] 1986, 1: 14-17). Malthus’s claim of a decisive role played by proportions in political economy probably resulted from generalization from his diagram of the rates of increase of means of subsistence and population.⁸ In the *Principles*, he makes a sweeping generalization that “all the great results in political economy...depend upon proportions” ([1820] 1989, 1: 432).⁹ From his doctrine of proportions he derives an aversion to the “tendency to extremes” (1: 352n), one of the great sources of error in political economy “where so much depends upon proportions” (2: 252; this last specification was added in the 1836 edition). In the 1817 edition of the *Essay*, he derives from that doctrine a criticism of the argument that “what is good to a certain extent is good to any extent” ([1798] 1986, 2: 70). In addition, Malthus applies the principle to individual positive doctrines on saving, on unproductive consumption and effective demand, on population, and on the distribution of property.

The doctrine of proportions is intrinsically limited by the difficulty of ascertaining where the right proportion lies. Thus, we may safely believe that there is a point at which “the division of property is best suited to the actual circumstances of the society” and yet “we may not know how to place it” (Malthus [1820] 1989, 1: 9-10). One consequence of this imprecision is the need for “modifications, limitations and exceptions” to every “rule or proposition” (1: 7). As a whole, it favors laissez-faire, albeit more on negative

⁸ On the continuity in positive contents between the *Essay* and the *Principles*, see Spengler 1945; see also Stigler 1952 and Samuelson 1978.

⁹ In the 1836 edition an intriguing footnote is added: “It is not, however, in political economy done that so much depends upon proportions, but throughout the whole range of nature and art” (Malthus [1820] 1989, 2:269). It is worth adding that the application of the “problem de maximis et minimis” in political economy, in connection with luxury, had already been foreshadowed by Paley ([1785] 1786, 597-98).

than on positive grounds. Malthus contends that interventions aimed at increasing the proportion of consumption or of investment in one sector of the economy are always based on guesswork as to the desirable proportions and would be poorer approximations to the correct proportion than those brought about by historical circumstances. Yet, laissez-faire allows several exceptions and, accordingly, no clear-cut policy recommendations-not even pure noninterventionism may be derived from this doctrine. The unknowable correct proportion may be supposed to act-in those cases where it has been inadvertently reached-as a hidden cause promoting the progress of wealth, a cause which may be at work ubiquitously, and whose function is roughly equivalent to that of François Quesnay's and Smith's "animal principle" (1: 432). This doctrine seems to condemn us to uncertainty since "it necessarily opens the way to differences of opinion" concerning optimal proportions "and thus throws a kind of uncertainty over the science of political economy" (1: 515). This confirms political economy's "nearer resemblance to the sciences of morals and politics, than to the science of mathematics" (1:518; see also 1:2).

In Malthus the doctrine of the "middle" relates more to the calculus of fluxions than to Aristotelian ethics. In *Observations on the Effect of the Corn Laws* ([1814] 1986), he declares that much of morals and politics "seems to be of the nature of the problems *de maximis et minimis* in fluxions; in which there is always a point where a certain effect is the greatest, while on either side of this point it gradually diminishes" ([1814] 1986, 7: 102). This statement is repeated in an 1829 letter to Whewell (De Marchi and Sturges 1973, 387). And yet, Malthus seems to have been discouraged from applying the calculus of fluxions to political economy by the difficulty he saw using mathematical tools for economic questions. He avows inability "to see how such propositions could be put into proper language for a fluxional solution, varying as the result must do with the fertility of soils and the productiveness of capitals" (De Marchi and Sturges 1973, 387). Regarding the desirability and difficulties of applying mathematical tools, Malthus confesses to have been convinced by the example provided in Whewell's papers that mathematical calculations may sometimes be advantageously brought into political economy, "particularly with a view to determining the different degrees in which certain objects are affected, under different hypotheses" (De Marchi and Sturges 1973, 387). Yet, the major difficulty "is getting data...sufficiently near the truth; and such as can be stated distinctly in mathematical language" (387). There are two points at stake: first, the usefulness of mathematical tools (he acknowledges their usefulness in terms of analytic precision and adds his cherished idea of a "resemblance" between questions of political economy and the problem *de maximis et minimis*); and second, the applicability of mathematical theories to practical problems. On the second point, Malthus echoes Adam Smith's and Dugald Stewart's objections to "political arithmetic," prompted by lack of faith in the possibility of obtaining empirically significant figures (see Smith [1776] 1976, book 4, chap. 5, part b, par. 30; letter to George Chalmers, 10 November 1785, in Smith 1977, 288; Stewart 1854, 2: 33, 331-32). Besides, there seems to be the further difficulty of reducing the complexity of variable factors, such as land

and capital, to the simplicity of mathematical language.

Definitions

Malthus and Ricardo explicitly disagreed on the subject of scientific language. This was a widespread concern by the time of Lavoisier's reform of the language of chemistry at the end of the eighteenth century. Malthus's reflections on these points seem to elaborate on E. Bonnot de Condillac and Dugald Stewart (see Condillac [1746] 1947, 404-4 and 106-10; Stewart 1856, I: 197, 282-89, 2: 5-22). Toward the end of his life, Malthus wrote an essay entitled *Definitions in Political Economy* ([1871] 1986). The points worth our attention here are two: the first is the threefold partition of the sciences: (a) mathematics, which offers fewer problems, since, even if "words may vary... the meaning... is always the same" ([1827] 1986, 85; compare 8: 115); (b) natural history, where the problem may arise of assigning one individual to one of two "adjoining classes" (85); (c) the sciences of morals and politics, where one more source of complication arises, since terms may be "understood differently by different persons, according to their different habits and opinions" (85). Projects of radical reform in the language of the latter type of sciences are unpractical, since the terms "are of constant application in the daily concerns of life" (8: 6). Malthus suggests, accordingly, that in political economy two linguistic authorities should be followed, namely, the "conversation of educated persons" and "the most celebrated writers in the science" ([1827] 1986, 7). Deviations from common language may be introduced, with prudence, only for clarity and consistency sake (8: 7). In the *Principles*, he criticizes Ricardo for departing from "the ordinary and most correct language of society" (Malthus [1820] 1989, 2: 217; see also a footnote added in 1836 to page 336; in Malthus 1820, 2: 244-45). Malthus's attitude regarding language may be also described as being *via media*, if, on the one hand, he charges Ricardo with pursuing an untenable ideal of separation between ordinary and scientific language, and on the other hand, he refuses to follow Whewell because of his carelessness about definitions. For Malthus, scientific definitions are a type of hypothesis to be confirmed by the growth of knowledge. Hence, "new definitions of terms" and "our advances in knowledge... act and react upon each other" (De Marchi and Sturges 1973, 392-93).

Partial Conclusions on Malthus's Methodology

The main philosophical influences on Malthus's work were, first, Scottish Newtonianism—namely, Maclaurin, Hume, and Dugald Stewart—and, second, Paley and the Cambridge *via media*. Both groups exhibited a preoccupation with the peculiarity of social studies, a concern with the role of scientific language, and a peculiar way of granting social science partial autonomy, while maintaining some interaction between the latter and moral discourse. Malthus's population theory and his political economy

have much in common both in terms of doctrinal contents and in terms of methodological inspiration. Nonetheless, Malthus's approach evolved, with the turning point being around 1803. In 1798, Malthus's own "experimental" attitude on moral subjects did not lead him any further than Hume's thought experiments. In the second *Essay* and in the *Principles*, he became increasingly aware of the role of multicausality, of the existence of feedback loops, of the imprecision of any mathematical model, and of our inability to ascertain the right proportion of factors that should be at work in various circumstances.

Reconstruction of Ricardo's Methodology

"A Man from Another Planet"

The first piece of the puzzle of Ricardo's intellectual background is his education. Piero Sraffa (1955, 31) argued that he may have attended the celebrated Amsterdam Talmud Torah for two years, yet no decisive proof is available. In any event, Ricardo's education was not as completely "neglected" as he sometimes complained (letter to Mill, 12 September 1817; Ricardo 1951-73, 7: 190) and was probably dual, including an unknown proportion of Jewish and secular elements.¹⁰ Certainly, the mere fact of being an intellectual outsider contributed to the molding of Ricardo's mind, making him "a man from another planet" ("Lord Brougham's Sketch of Ricardo in Parliament"; Ricardo 1951-73, 5: 296).

The second component of Ricardo's intellectual background was his experience in the world of finance out of which a growing interest in questions of monetary, commercial, and fiscal policies arose. By age fourteen he was employed by his father in the stock exchange (Ricardo [1824] 1955, 4). When he married at age twenty-one, he began to do business on his own; that was made possible by an already acquired reputation that granted him the support of an eminent banking house in the city. He acted as a stockjobber and soon became one of the most respected and influential men in his trade, mainly because of his ability and extraordinary quickness in perceiving the tendencies of the stock market (see Sraffa 1955, 67-94). Ricardo did not have a high opinion of what the stock exchange could offer from an intellectual point of view, and of the rather restricted vision of financial affairs by most of its members, who "consider more, the immediate effect of passing events, rather than their distant consequences" (letter to John Sinclair, 31 October 1814; Ricardo 1951-73, 6: 150-51). The third and universally ignored contribution to Ricardo's intellectual development was the influence of Unitarian theologians. The fact that Ricardo's conversion from Judaism was not to the Church of England, but to the most radical sect of Dissenters, fell apparently into oblivion.¹¹ Sraffa rescued this piece of information, but he could hardly be said to have overstressed its

¹⁰ On the education question, see Sraffa 1955, 31-32; Heertje 1970, 591-92; 1975.78-79; Weatherall 1976, 12-13.

¹¹ This fact was mentioned in the obituary in the Sunday Times, 14 September 1823, but it is remarkable that the "Memoir" avoids any mention of Ricardo's conversion ([Moses] Ricardo [1824] 1955,5). Jacob Hollander ([1910]

implications.¹² In fact, the impact of the Unitarian literature on the English intellectual scene of those decades was not unknown (see Halévy 1901, 3: 239-40). No less than the circumstance that being a Unitarian in the last three decades of the century almost implied being a revolutionary in politics (see Clark 1985). The known facts are as follows: Ricardo left the Jewish faith around 1793, the year of his marriage, and shortly after appears to have become a Unitarian. We know that he became a “hearer” (parishioner) of the Unitarian ministers Robert Aspland and Thomas Belsham and that even after he moved to Gatcomb he never abandoned Unitarianism. For many years Ricardo attended Belsham’s and Aspland’s sermons and probably also the lecture courses on various subjects delivered after Sunday service to a more restricted audience, in addition to enjoying private conversations with them (see Sraffa 1955, 37-43). The Unitarian ministers’ understanding of their task was centered, in a Christian Enlightener’s mood, on the promotion of knowledge, and they encouraged their hearers to improve their education, while fostering specialization in one or two subjects chosen among those which were deemed “useful,” instead of being “without the grasp of the human mind” (Belsham 1826-27, 256). Approved subjects included the study of astronomy (which, according to Belsham and following a belief shared also by Hume’s Cleanthes, is useful in so far as it prompts reverence to the wisdom displayed by God in arranging the order of the Universe); the study of “the powers of nature in order to improve the arts of life”; the study of “the principles of the social compact, and the laws of civil society” (Belsham 1826-27, 256). Useless inquiries were those on “substances, and essences, the nature of matter and spirit, the mode of the divine existence” (255).

Besides exegetical studies in the New Testament, Thomas Belsham wrote a treatise, *Elements of the Philosophy of the Mind*, that drew inspiration mainly from David Hartley and Joseph Priestley and was often critical of Dugald Stewart. The points of interest to us are the following:

(a) The status of scientific language: Belsham favors a separation of scientific terminology and ordinary language; given that “many combinations of ideas occur frequently in the arts and sciences, which do not occur in common life,” it follows that “all arts and sciences have terms peculiar to themselves which do not occur in common life” (Belsham 1801, xvi).

1968,33-34) still seems to be ignorant of Ricardo’s adherence to Unitarianism, and only with Sraffa has this circumstance been brought to light again (see Sraffa 1955,3743; Heertje 1975,79-80).

¹² On Ricardo’s attendance of the “instructions” of Thomas Belsham, see Sraffa 1955, 3940. Sraffa mentions two Unitarian sermons of 1813 and 1814 among the “oddments” in Ricardo’s pamphlets (now at the Goldsmith Library at London University) without mentioning the authors and titles (195 1-73, 10:402). The two sermons are Lindsay 1813, and Travers 1814. The sermon by James Lindsay (an acquaintance of Ricardo; see Sraffa 1955,40-41), the somewhat dull title notwithstanding, argues for one of the Unitarians’ main claims, that is, that Christianity consists of “a few plain truths” compatible with reason, while the “metaphysical subtleties” (Lindsay 18 13, 29) and the “unmeaning distinctions of theological systems” (4) of the Middle Ages resulted from corruption of Christianity.

(b) Essences: our knowledge never reaches the “real” essence of any substance, for example, “that peculiar contexture of its constituent particles upon which its peculiar properties depend”; thus, “of real essences we know nothing” (xii); natural science, or “Experimental Philosophy” is based on “observations of the senses,” and the latter “do not teach us the real essence of substances” (xxxii); intuition does play a role, but this role is confined to demonstration, and “Science” in a proper sense is knowledge acquired by demonstration (xxxiii).

(c) The status of the “moral sciences”: Belsham favors an idea opposite Stewart’s. On Locke’s authority he argues that “as moral ideas are equally capable of strict definition with mathematical ideas, demonstration is equally applicable to moral subjects” (xlv). In some cases at least, the reasoning on the behavior of voluntary agents may reach the same degree of precision as “that with which we foretell the effects of physical causes” (lxxxiii), since also in these cases “the same cause operating in the same circumstances will invariably produce same effects” (lxxxii-iii).

(d) The status and function of the science of politics: natural philosophy differs from the philosophy of mind in that, while the former has the task “to investigate the laws, and to resolve the phenomena, of the material universe,” the latter “investigates the laws, and explains the phenomena, of the intellectual world” (1). Yet, Belsham adds, “knowledge, says Lord Bacon, is power” (2), and thus both fields of knowledge are of use in bettering the human condition either in terms of material comfort or of moral awareness. The science of politics is part of the philosophy of the mind, providing the ruler with “a profound knowledge of human nature” and teaching him “how to guide the various passions and contending interests of parties, and of individuals, to the general good” (4).

(e) Newton’s *regulae philosophandi*: the version adopted by Belsham omits the fourth rule. This rule was first added in the third edition of the *Principia* (1726) and was, therefore, unknown to the first popularizers of Newton. It was emphasized by Hume and the Scottish tradition; and, as we have argued in discussing Malthus’s methodology, it was meant to stress a demand for empirical constraints on theories. It should be kept in mind that Ricardo was a disciple of Thomas Belsham at a stage of his life when he decided to dedicate his intellectual abilities to the natural sciences. The fourth element to be considered is that as soon as his improved economic conditions gave him leisure, Ricardo became interested in mathematics, geology, mineralogy, and chemistry. According to the “Memoir,” he was drawn to science by the “example and instigation of a friend” ([Ricardo] [1824] 1955, 6; compare J. Hollander [1910] 1968, 35-36; Sraffa, 1955, 35). This friend could have been William Frend (himself a Unitarian) or Joshua Basevi, or also - we would add - Thomas Belsham, a name such as to prompt reticence by the author of the “Memoir.” These scientific interests are supposed by Sraffa to have had “a more decisive influence on Ricardo’s characteristic cast of mind than the teaching of his later mentors, James Mill and Bentham” (Sraffa 1955, 35; compare J. Hollander [1910] 1968, 35-36).

A fifth, and highly controversial, piece of intellectual influence on Ricardo have been Benthamism. The

early studies of the Utilitarian movement have stressed the importance of Ricardian doctrines for the Benthamites; but the other side of the relationship, that is, the influence of Bentham and Mill on Ricardo has been left by Elie Halévy in the state of conjecture, often repeated and never explored. Schumpeter (1954, 471) denied, in his rather cavalier way, the existence of any trace of such influence, and Sraffa concluded that “there is little doubt that his influence was negligible” on the theory of the *Principles* (Sraffa 1951, xx-xxi; see also 1955, 35). More recently, Samuel Hollander has attacked, in his own cavalier way (ignoring all counterevidence) the existence of any connection of this kind. Hollander is right in stressing that Ricardo was adopted by the Benthamite coterie only after he had already begun to write on economic subjects, and indeed after he had already elaborated his main doctrines (S. Hollander 1985, 1:15-36). He is correct to write, “James Mill was interested in economic theory as a weapon in the service of his political program” (S. Hollander 1985, 1: 28) and in stressing Ricardo’s growing awareness of Mill’s dogmatic attitude in almost every field, ranging from value theory to population (see also Rizvi forthcoming). In fact, the relationship with James Mill did have an impact on Ricardo, but more in those “practical” matters (style of composition, publishing policies, and direct engagement in politics) in which James Mill was really interested than in matters of “method,” as fancied by Halévy. It is also true that Ricardo raised doubts, especially toward the end of his life, about Mill’s overly dogmatic positions in political and economic matters and was suspicious of Mill’s inclination to understand political economy as a handmaid for his politics.¹³ On the other hand, he admired Mill’s *History of British India*, and he mainly followed Mill’s reading list in philosophy and politics. All these circumstances must be interpreted with caution: we are confronted with a gap between the intellectual stature of Mill and that of Ricardo, between Ricardo’s modesty and Mill’s near-fanaticism, as well as with the possibility that Ricardo and the Benthamites were talking at cross-purposes, originating from the fact that he had been ‘adopted’ by the latter on political grounds. Thus, Ricardo’s occasional claims to Benthamism should neither be ignored, as Samuel Hollander does, nor taken too literally.

The sixth element is provided by the economists who influenced Ricardo, that is, by Adam Smith, Malthus, and Jean-Baptiste Say. Ricardo had for many years a rather close relationship with Say. They met, corresponded, commented on each other’s works and on each other’s criticisms in the various editions of their books (see Weatherall 1976, 103-04; Blaug 1958, 64-65 and 89-90; S. Hollander 1979, 500-2). Ricardo quoted Say approvingly on a few occasions, while harshly criticizing his doctrine of utility. For our purposes, it is important that Say’s *Traité*, particularly in the “Discours Préliminaire,” includes extended methodological discussions. The main theses are: facts treated by earlier political economists are capable of

¹³ For example, in his correspondence with Mill, on one occasion he defends the views of opponents of the principle of population (see letter to Mill, 18 December 1821, enclosure, Ricardo’s Notes on Mill’s “Elements of Political Economy”; 1951-73, 9: 126; see also S. Hollander 1985, 27, and, for a more balanced account, Collini, Winch, and Burrow 1983, 112-26).

becoming the subject matter of an exact science (Say 1803, iv); a science of statistics may be distinguished from political economy—the former deals with particular or variable facts, while the latter deals with constant or general facts (v); Adam Smith may be criticized precisely for having assembled randomly general and particular facts (vi, xxiv); and political economy, like the other exact sciences, is composed of a reduced number of general facts, plus a few principles (the relationships between general facts) and those basic elements are reached by way of “analysis,” on the basis of facts (xi). Several similarities with Ricardo are apparent: a tendency to discard all specific particular and changing facts from the “science” of political economy; the actual stress on “synthesis,” that is, on the deductive process (the inductive process of “analysis” being taken somehow for granted); the charge leveled at Adam Smith of lack of consistency. Yet, Halévy’s “French connection,” linking Ricardo via Say with the Physiocrats, is one more piece of Franco-centric mythology.

The Philosophy of David Ricardo

Schumpeter’s claim that Ricardo was no utilitarian “because that busy and positive mind had no philosophy at all” (1954, 47 1) seems to be supported by the apparent lack of methodological statements in Ricardo’s works. If one looks at his “Notes on Malthus” (Ricardo 195 1-73, vol. 2), the “no philosophy” feeling seems to draw further support from the absence of comments on the introduction to Malthus’s *Principles*. Yet, Ricardo’s correspondence manifests his vivid reaction to the main claim of that introduction (letter to Mill, 1 January 1821; Ricardo 1951-73, 8:331); he read philosophy in depth; and the philosophical and methodological remarks scattered through his correspondence, when patiently assembled, afford much more than Schumpeter would have expected. In a word, Ricardo was no self-made, “unphilosophical” or *Metaphysik-frei*, scientist. On a couple of occasions, Ricardo declared his own allegiance to “the Bentham and Mill school” (letter to Place, 9 September 1821; Ricardo 1951-73, 9:952; letter to Maria Edgeworth, December 1822; Ricardo 1951-73 9: 239).¹⁴ Besides, he may have shared the widespread understanding of political economy as a part of the “science of legislation” (see Collini, Winch, and Burrow 1983, 115-16). Mill, after Ricardo had completed his *Principles*, set out to initiate him in that science, to which his own *History of India*, he thought, could be “no bad introduction” (Ricardo 1951-73, 6: 195; compare 231). Ricardo was highly appreciative of this work; yet, it is precisely the most Scottish, namely, conjectural historical, and the

¹⁴ In these letters, Ricardo declares his belief in the greatest happiness principle, without any mention of Bentham’s philosophy as a whole. There is still one cryptic sentence to explain: “I like the formal method, after the manner of Bentham and Mill” (letter to Maria Edgeworth, 11 January 1823; Ricardo 1951-73, 9:257-62, 259). In the context of this letter, the “formal method” turns out to be Mill’s “art of laying down your thoughts, in the way most easy to apprehension”; this reference, in the context of a semi-serious discussion of the subject of “potatoe flour” as an alternative to wheat, amounts to little less than poking fun at Bentham and Mill.

least Benthamite of Mill's writings.

In 1817 and 1818, Ricardo read philosophy intensively, partly under Mill's guidance. From his correspondence with Mill, the skeptic Pierre Bayle appears to have been his favorite reading, and indeed long abstracts from Bayle's *Dictionnaire* and *Pensées Diverses* are copied in his commonplace books (see Ricardo 195 1-73, 10:394). Also Locke's *Essay* is praised: even if he did "not take much pleasure in such subjects as that *Essay* treats of," Ricardo believed there were a number of "points which... he has successfully established" (letter to Mill, 9 November 1817; Ricardo 195 1-73,7:206). Hume's *Essays*, Bacon, Dugald Stewart, Reid, Berkeley, Warburton, Beattie, and finally Montesquieu and Millar are mentioned among Ricardo's readings (letter to Mill, 19 October 1817; 12 August 1818; Ricardo 1951-73,7:196,277-78). On one occasion he expresses the wish to discuss with Mill whether he saw "no weight in the objections offered by Reid and, I believe, by Dugald Stewart, to the mind perceiving only ideas, and not external objects" (letter to Mill, 18 December 1817; Ricardo 1951-73,7:229). It is striking that Hartley and Priestley are never mentioned. We cannot say whether the reason for this is that Ricardo had already become acquainted with them in a previous phase, under Belsham's tutorship; let us note that he had no need to read them directly in order to touch upon their ideas as these were discussed both by Belsham and by several authors he was reading at the time.

Two comments by Ricardo are worth noting. On one occasion metaphysics is mentioned incidentally, being understood in the sense of epistemology-cum-philosophy of mind; in this connection Ricardo comments on the commonsense opponents of Hume's skepticism that they are unable "to remove the difficulties which make the subject of metaphysics so perplexing," because their solutions on some points "would only transfer your difficulties to some other" (letter to Mill, 12 August 18 18; Ricardo 195 1-73,7:277-78). The other comment is on Bayle and how difficult it is to "account for evil in a world governed by a Being of unbounded benevolence" (letter to Mill, 9 November 18 17; 195 1-73, 7:206). This had much to do with the teachings of the Unitarian divines. In fact, evil was one of the chief theological concerns of both Priestley and Belsham.¹⁵ There may be a link also between these considerations and Ricardo's claim that in political economy one should avoid consideration of the moral usefulness of the factors under scrutiny (see "Notes

¹⁵ Thomas Belsham believed that the fact "that evil, natural and moral, is unavoidable in the works of God, is a problem of very difficult solution" (1826-27,2:37); if we consider the world as a whole, "we see enough" to be satisfied "that the result of it is a great preponderance of good... but when we consider the divine dispensations in detail, we... discover that they are far beyond the reach of human sagacity" (2: 36-37). Priestley says, "Even everything painful and disagreeable in the world appears to a philosopher. . . to be excellently provided as a remedy of some greater inconvenience, or a necessary means of a much greater happiness; so that. . . he sees all temporary evils and inconveniences to vanish, in the glorious prospect of the greater good to which they are subservient" (1775, xvii). This sounds like Ricardo on "intervals" and "permanent states" (see, for example, letter to Malthus, 24 January 18 17; 195 1-73, 7: 120); perhaps also for him "the prospect of a greater good" to be carried by the next permanent state was enough to "outweigh all temporary pain and distress" occurring during intervals.

on Malthus"; Ricardo 1951-73,2:210,337-38). It may have been skepticism with regard to the scope of our moral knowledge that convinced him that a value-free attitude was the safest to be taken by a social scientist. This attitude was precisely what Marx praised when he defined him a "Stoic," contrasting him with the "priest" Malthus. Ironically, this was also a consequence of a theological outlook. Finally, Antoine Destutt de Tracy deserves mention. He is the only philosophical writer mentioned in Ricardo's *Principles* (in the third edition). The definition of measurement in his *Eléments d'idéologie* ([1803] 1804, 187) is quoted approvingly (having in mind the quest for an invariable measure of value); Ricardo adds in a footnote that he regrets, however, that Destutt de Tracy had shared Say's mistaken definitions of "value," "wealth," and "utility" (Ricardo 1951-73, 1:284).

Against Vagueness

We have mentioned that Bentham had his own theory of language. Its inspiration may be found in *Diversions of Purley* by John Horne Tooke (see Stephen [1900] 1950, 1: 136-42). It is a sentence from the latter that Mill chooses as an epigraph to chapter 9 ("Abstraction") of his *Analysis*. Bentham's projects for the radical reform of legal language are inspired by nominalism, by the idea of the possibility of a new foundation of language as such, starting with its basic (and ahistorical) elements, and by a suspicious attitude toward ordinary language (see Mack 1962, 151-200; Stephen [1900] 1950, 1: 136-42; 2:454-9; Guidi 1991,58-72). We have described above Belsham's views on language and his artificialist strategy vis-à-vis the language of the sciences. It is striking that Belsham and Bentham headed toward almost identical policies, even if on the basis of different doctrines. A Bentham-like mood, even if probably inspired by the Hartley-Priestley-Belsham legacy, inspires Ricardo on questions of scientific language, starting with the charge he levels at Malthus of "sometimes attaching one meaning" to words and "sometimes ~t~other" (letter to Mill, 1 January 1821; Ricardo 1951-73, 8:331). In a similar vein, he doubts his own ability to reach such "a degree of precision and accuracy" (letter to Trower, 22 March 1818; 1951-73, 7:259) as to be able to define "accurately and rigidly, the terms employed," as requested by Trower (Trower to Ricardo, 28 February 1818; 1951-73, 8:256). A similar preoccupation with conditions of meaningfulness of scientific statements is revealed by a remark in the *Principles* concerning the need to define the medium in which one commodity's value is estimated, in order to avoid that "no idea can be attached to the proposition" (1:377). Next after his aversion to vagueness comes his aversion to disputes on words. Various disagreements in political economy are said to derive from misunderstandings on the use of words, rather than from different opinions on facts: some of Malthus's objections "are merely verbal" (letter to Malthus, 4 September 1820; 1951-73, 8:228; compare letter to Place, 1 November 1819; 1951-73, 8:121); criticism of Bosanquet's views on the issue of paper currency includes equivocation over the use of the word "excess" (3:228); and the charge of confusing disputes over terminology for discussions of facts is often leveled at

Malthus (Ricardo [1928] 1951, 2: 210, 337-38).

Ricardo often mentions the gap between ordinary and scientific language. For instance, accumulation of capital is not “hoarding” (Ricardo [1928] 1951, 2: 320n). We have seen how Malthus too shared this awareness, his more sympathetic view of ordinary language notwithstanding. And yet, the issue of the appropriateness and consistency of language was often raised between them.

Laws, Tendencies, and Natural and Necessary Causes

For Ricardo, “to determine the laws which regulate” the distribution of the whole produce of the earth between rent, profit, and wages “is the principal problem in Political Economy” (Ricardo [1817] 1951, 1: 5). This has been often contrasted with Malthus’s definition of political economy as “an inquiry into the nature and causes of wealth” (letter to Ricardo, 9 October 1820; Ricardo 1951-73,8: 278). Ricardo’s definition grants political economy a more limited scope, assuming more factors as given. For example, effective demand is a problem for Malthus, while for Ricardo it is constant. The latter, indeed, leaves the choice between luxuries and indolence, as a subject not pertaining to a value-free science, to morals, but he assumes that the “wants and tastes of mankind” (letter to Malthus, 23 October 1814; 1951-73,6: 132, 148) will always provide sufficient effective demand for whatever amount of commodities will be produced.

A more significant feature of Ricardo’s definition of political economy is the choice of “laws” instead of causes. Halévy made much of that difference. He argued that because the term “law” never appears in *The Wealth of Nations*.¹⁶ Ricardo may be thought to have inherited from the Physiocrats a conception of political economy as a “science of laws” (Halévy 1901,2:219,246). The fact, however, is that the one undoubted French influence on Ricardo, Say’s *Traité*, mentions “general facts” and “principles,” not “laws,” and the implications of Ricardo’s choice of the term “law” remain accordingly less obvious. A clarification of Ricardo’s use of the cognate terms “principle,” “axiom,” and “tendency” is in order here. Ricardo in the *Principles* mentions laws twice more. In chapter 2, he mentions the “laws which regulate the progress of rent” and “those which regulate the progress of profits” ([1817] 1951, 1: 68). In chapter 5, he mentions the laws by which wages are regulated (1:105). In chapter 2, he mentions the “common principles of supply and demand” (1:69); “principle” here seems to refer to something more general than a law, the latter resulting from principles when applied to a specific set of cases. Ricardo employs also the term “axiom” on one occasion, referring to what he assumes to be an incorrect proposition, namely, “that the price of commodities depends solely on the proportion of supply to demand, or demand to supply” (1:382). Thus, Ricardo had in mind a distinction between basic laws, the principles or axiomata, and derived laws, such as the laws regulating wages and profits. In both cases, however, their status is that of formulations of constant and invariable cause-effect relations. The sharp difference that Ricardo carefully draws is that

¹⁶ In *The Wealth of Nations*, Smith systematically uses the Newtonian term “principle” to refer to laws.

between “natural and constant” cause-and-effect relations and “accidental causes” and “temporary effects” (1:91-92, 11511; compare 195 1-73,7: 120). His plea for a theoretical attitude is based precisely on the need to discover the “natural and constant” causes (see De Marchi 1970, 258-66). If one keeps in mind Bernard Cohen’s reconstruction of the “Newtonian style,” that identifies the first phase of theory-building with simplification and construction of a mathematical analogue of the explanandum (Cohen 1980,63-64), Ricardo’s preference for idealized models may be said to follow closely a blueprint that had been drawn by Newton (even if not by the Scots’ Newton). What are Ricardo’s “principles” or “axiomata”? He never offered a list. De Marchi has made an attempt to single out three of them: the law of diminishing returns, the principle of population, Say’s law (see De Marchi 1970, 259). One should add perhaps: the “common principles of supply and demand.” As far as the status of his laws is concerned, Ricardo twice makes the commonplace comparison with the law of gravity, that is, with the eighteenth-century paramount example of a scientific law ([1817] 1951, 1:108, 120; see also letter to Malthus, 27 March 18 15; 195 1-73, 6:204). On a couple of occasions, but in less binding contexts such as a letter to John Ramsey McCulloch of 1821 and The Petition of the Merchants of London of 18 19, he introduces the much more intemperate, and typically Benthamite, equation of the laws of political economy to the propositions of geometry (8:388, 390; 5:38; compare Sowell 1974, 118-19). After basic laws and derived laws, Ricardo mentions “tendencies.”

Richard Whately criticized his contemporaries’ ambiguity in their use of the term “tendency,” sometimes meaning “the existence of a cause which, if operating unimpeded, would produce a certain result,” and sometimes meaning “the existence of such a state of things that that result may be expected to take place” (Whately [1831] 1847, 231-32), and thus failing to distinguish between “analytical” propositions and historical generalizations (De Marchi 1970, 258-64; Sowell 1974, 132-37). Ricardo’s tendencies may be interpreted in terms of “contingent predictions” (De Marchi 1970, 259), deduced from the fundamental laws, the derived laws, and a set of hypotheses that would be required to mount Ricardo’s model of the British economy of his day. Thus, they belong too to an idealized model, and no claim is made to their being statements of fact. A list of Ricardo’s tendencies should include: the “natural tendency of profits... to fall” ([1817] 1951, I: 120); the tendency of rent to rise (1: 78); the tendency of the wages of labor to fall (1: 101); and the tendency of the necessaries of life to become dearer (1: 93), which is the most basic-and “Malthusian”-tendency, on which the first three are eventually dependent. Ricardo was aware that those tendencies are at work in an idealized world. In fact, he repeats over and over again that he is not considering concrete facts but rather “strong cases.”

Questions of Fact and Questions of Science

One of Ricardo’s basic concerns was not very far from Malthus’s, namely, a plea for theory as against crude

empiricism (see letter to Malthus, 24 January 1817; 1951-73, 3: 181,239). But from that shared preoccupation diverging attitudes derived. Ricardo insists repeatedly on the distinction between questions of “fact and degree” and “questions of principle” (letter to Trower 15 September 1820; 1951-73, 8: 234). One of the main sources of his misunderstandings with Malthus is his stubborn insistence on the logical analysis of the hypothetical case under scrutiny, without confusing it with discussions of concrete aspects (letter to Malthus, 11 October 1821; 1951-73, 9: 95-97). He is aware that in the real world the propositions of political economy hold in a very imperfect way, but for him science seems to deal with an idealized world. His typical answer to Malthus’s objections is that something “is a question of fact not of science” (letter to Malthus, 22 October 1811; 6: 64; compare Blaug 1958, 187-88). A mark of Ricardo’s attitude is the use of “strong cases.” These are idealized situations, based on avowedly unrealistic assumptions ([1819] 1951, 1: 121-22; see also 1951-73, 4: 312; 8: 184). In 1820, he reproached Malthus for considering his book “as more practical than I intended it to be. My object was to elucidate principles” (8: 184). He had made the same kind of theoretical retreat before, aimed at immunizing his own theory against criticism, by turning the consideration on which Malthus’s approach was based into a defensive weapon for his own approach. Complexity and multiplicity of causes provide reasons for abstractness and simplicity of explanations. Ricardo had indeed written to Malthus that, granted that there are “So many operating causes in Political Economy. . . there is a great danger in appealing to experience in favour of a particular doctrine” (letter to Malthus, 7 October 1815; 1951-73, 6: 295). And the test par excellence of a satisfactory explanation might be its simplicity or - as Ricardo expressed himself on one occasion - its ability to account “for all the phenomena in an easy, natural manner” (letter to Malthus, 17 April 1815; 1951-73, 6: 214). According to Adam Smith, it was excessive fondness of simplicity that led Descartes astray (Smith [1795] 1980, sect. 4, par. 6; compare Cremaschi 1984, 4147). This was also Malthus’s preoccupation vis-à-vis Ricardo.

Ricardo’s countermoves in the face of Malthus’s objections were essentially based on the criterion that what matters is the long run: Malthus always has in mind “the immediate and temporary effects of particular changes” while Ricardo fixes his “whole attention on the permanent state of things which will result” from those changes (1951-73, 7: 120). Thus, faced with objections based on empirical evidence, he tends to protect his position by retreating from experience.¹⁷

Why is Ricardo, once he had constructed an idealized model, still at odds with what Bernard Cohen describes as Newton’s final stage? In this stage, additional conditions are gradually added to the model so that “the system and its conditions no longer represent merely nature simplified and idealized or an imaginative mathematical construct, but seem to conform to (or at least to duplicate) his realities of the external world” (Cohen 1980, 64). The answer suggested by De Marchi is that his concept of “natural” implied some confusion between that which is basic and that which actually prevails in the long run (1970, 264). Thus, the “natural” price is the purchasing power that a commodity “would possess, if not disturbed

¹⁷ On “insulating strategies,” see Dascal 1990.

by any temporary or accidental cause" (1951-73, 1:92). All the features of his idealized cases, Ricardo assumed, were also the main ones in the real world. So, on the one hand, his idealized models are immune from criticism, insofar as no claim to their realism is implied, but, on the other hand they provide a sufficient basis for policy advice in so far as the main forces at work in the actual world are supposed to be those described by the model, and what is left is "temporary and accidental." As a result, not only Ricardo's laws but also his four tendencies may be safely considered to be as "certain as the law of gravitation" (letter to Malthus, 27 March 1815; 1951-73, 6: 204). After that, one should not be surprised when faced with testimonies by some of his contemporaries about his attitude, which is that of a man "*herissé de principes*" and with a complete "disregard of experience and practice" (J. L. Mallet's manuscript diary, quoted in Ricardo 1951-73, 8: 152).¹⁸ Yet, an important development may have occurred toward the end of Ricardo's life, when he wrote the machinery chapter. Remarkably, it paralleled the evolution of Malthus's thought after the first *Essay*, namely, from an absolute belief to a less absolute belief in the unchanging character of economic laws. It is worth noting that McCulloch immediately perceived this change (see McCulloch to Ricardo, 5 June 1821; 1951-73, 9: 382). This point has been stressed by John Davis (1989), developing De Marchi's argument and highlighting the role of a philosophical assumption in Ricardo's thinking, namely, the classical belief in a "natural" order. From that order, both explanations (in terms of cause-and-effect relationships) and prescriptions (in terms of courses of action leading to the maximum amount of good) were derived. It was this philosophical outlook that often short-circuited Ricardo's idealized models with the "real" core of phenomena, beyond temporary variations.¹⁹ In the chapter on machinery, Ricardo introduced a few preconditions for seriously undermining not only a number of positive views he had held, but also a basic feature of his general outlook, expressed on one occasion by the remark that "the principles of true political economy never changed" (Speech on Silk Manufacture Bill, 21 May 1823; 1951-73, 5: 296). In fact, the Malthusian population law ceases to apply in an unqualified way, since "unemployment may occur which is not of the temporary sort" and "re-employment which does occur from the extension of production or expansion of service employment adjusts the number of labourers by social intervention" (Davis 1989, 473-74; compare Milgate and Stimson 1991, 116-18). And the law of

¹⁸ See also another passage quoted in Weatherall 1976, in which Mallet writes, "What was said of Priestley, is not altogether inapplicable to Ricardo: that he followed truth, as a man who hawks follows his sport, at full speed, straight forward, looking only upward, and regardless of the difficulties into which the chase might lead him" (63). Another judgment of the same tenor is the one, quoted above, by Lord Brougham (see Ricardo 1951-73, 5: xxxiii, 128).

¹⁹ Davis stresses the fact that in Ricardo's identification of long run with the natural and of short run with the accidental effects rests on the presupposition that "temporary effects" are randomly common to all periods, and thus, leaving those effects aside, the laws of political economy may be thought to be inherently ahistorical (Davis 1989, 460). The point may be further highlighted by comparison with Dugald Stewart's claim of a historical character of the laws of political economy (see Stewart 1854, 1:222).

diminishing returns in agriculture is modified in an important sense, in that he now allows that technical progress is successful in counteracting declining productivity (Davis 1989, 474). Thus, social choices have a bearing on which of the possible developments will take place, both in matters of employment and in matters of agricultural production (the factor supposedly ruling over the development of the economy as a whole). Davis's conclusion is that "in the end, the laws of political economy cease to be natural ones. They are now socially constituted.... Political economy, therefore, becomes an inescapably social and historical discipline" (480). Ricardo "did not draw these conclusions" (480), and yet it is significant that the modifications in his way of understanding economic laws match the earlier modifications in Malthus's way of understanding the law of population. Ricardo probably did not live long enough to draw the full implications of what he had written in the new chapter. The massive philosophical reading he carried out at Gatcomb took place between the first and the third edition of the *Principles*, and one may suspect that the consequences of this reading were felt somehow in Ricardo's additions to the third edition, since they ultimately raised the question of the status of economic laws.

Partial Conclusions on Ricardo's Methodology

Ricardo's "busy mind" was able to make room for philosophical and theological interests. His modesty misled Halevy as to his supposed dependence on Mill and Schumpeter regarding the breadth of his intellectual interests. Ricardo's "cast of mind" resulted also from philosophical influences: it was molded possibly in a former phase by the teachings of Belsham; a certain similarity between this cast of mind and the mind of the "Bentham and Mill school" was probably perceived by Ricardo in a later phase; and Ricardo's intellectual horizons were expanding toward the end of his life, among other things, through closer acquaintance with the Scottish tradition, and yielding less and less compliance to James Mill. But the key item in Ricardo's philosophical and methodological grounding was an idea he inherited from Belsham: the limits-to-knowledge thesis, or the claim that essences (understood in terms of the Newtonian distinction between explanatory principles and principles in re) are unknowable. This idea yielded a peculiar match of radical skepticism with apriorism, a match quite different from the Scottish blend of non-rationalistic realism and experimentalism.

Conclusion

We have reconstructed two methodologies. These evolved in the course of a controversy between their authors. It remains to be seen how these methodologies interacted with positive claims, and whether there was any consistency between the strategies used in the controversy and the explicit methodologies. These

are questions we explore in another article (Cremaschi and Dascal, forthcoming). At this stage, our conclusions are the following.

First, Malthus's and Ricardo's "laws of economic science" are partly overlapping, as shown in table 1. In practice, while exceptions are admitted by Malthus for almost all economic laws, for Ricardo even contingent predictions allow no exceptions, apart from temporary variations that, being distributed randomly through different historical phases, are best dealt with by leaving them in the limbo of the unscientific. For Malthus, even the law of population seems gradually to shift from one category to the other, because after 1798 so many counteracting forces are discovered by him that the consequences of that law become postponed almost indefinitely. By 1821 Ricardo's refusal to permit exceptions is not so absolute, for important exceptions even to the laws of the most basic category become conceivable as he writes the chapter on machinery.

Second, we face a sustained conflict between two economists both professing adherence to the same Newtonian paradigm. This puzzle may be solved by taking into account the varieties of eighteenth-century Newtonianism. Malthus derived from the Maclaurin version of Newtonianism an anti-deductivist, anti-apriorist methodology aspiring to exactness. Ricardo's Newtonianism reflects Priestley's and Belsham's reading of the paradigm, anti-Cartesian insofar as it maintains a skeptical position on the knowledge of essences, but inclined to turn skeptical arguments into a defense of apriorism; in a word, inspiring a methodology of rigor (see Granger 1955, 295-327; 1959, 103).

Third, Ricardo avowed his exclusive interest in "permanent states," as opposed to Malthus who concentrated on what happens in the "intervals." The shared concept of proportions receives different overtones resulting from the divergent choices above. That is, for Ricardo, economics is a science of proportions (dealing with the laws that regulate the shares of the national product allotted to the three main classes), and the optimal proportion is the object of the science. Yet, equilibrium typically does not constitute a problem for him, since the optimal proportion is dictated by the laws of a natural order of society, dependent, in its turn, on the relationships of society itself with its physical and biological preconditions. All of this holds true before the machinery chapter. Malthus, on the contrary, from 1803 on opts for focusing on what happens in the short run. This leads him gradually to question his 1798 belief in a natural order. Thus, Malthus comes close to formulating what was to become the main problem of postclassical economic science, the problem of equilibrium (or, equilibrium as a problem). For him, the doctrine of optimal proportion fills the void that was later occupied by Walras's general equilibrium theory. Fourth, a certain trend in twentieth-century philosophy of science contends that a theory, in order to explain, should also be able to predict.

When judged by this standard, Ricardo (who looks more like a "scientist") hardly does any better than his opponent. The cul-de-sac in which both have been caught-Malthus until 1803, Ricardo until 1823-is that of the ambiguity of the concept of tendency. This ill-defined term (as noted by Whately) indicates both the

fruit of an abstraction and a “deeper” reality and makes theories either over-predictive or virtually incapable of prediction. In Malthus’s case, after 1803, the consequences of this ambiguity are stemmed by his preoccupation with the realism of hypotheses and by his willingness to build the complexity of causal agencies into his theories. In Ricardo, they are left unchecked until the third edition of the *Principles*.

Fifth, what is classical in both, beyond their divergences, is precisely that feature which almost everybody has criticized in the classics, namely, the enlighteners’ idea of a natural order. Both the fact of taking the problem of equilibrium as already solved and that of confusing two senses of “tendency” depend on this key idea. We face here a misplaced perception of the concreteness of an idealized model, which is mistaken for a hidden structure behind the phenomena. As a consequence, for both authors what is basic logically within the model tends to be confused with what is in a stronger sense “real” within, or behind, the phenomena and will accordingly prevail in the long run.

Table 1

Malthus

A.

The fixed laws of necessity or of nature
(tendencies always at work)

The two postulates or fixed laws of human nature:

- (i) that food is necessary to the existence of man
- (ii) that the passion between the sexes is necessary, and will remain nearly in its present state

B.

The most basic principles (established on basic human passions):

- (i) the law of population
- (ii) the law of diminishing returns in agriculture

C. The usual propositions of political economy (only probable, admitting of exceptions)

Ricardo

A.

Basic laws or principles (or axiomata)

- (i) The law of diminishing returns in agriculture
- (ii) The principle of population
- (iii) Say's law
- (iv) The common principles of supply and demand

B.

Derived laws (natural and constant cause-effect relations)
The laws regulating wages and profits

C.

Tendencies (contingent predictions)

- (i) The natural tendency of profits to fall
- (ii) The tendency of rent to rise
- (iii) The tendency of the wages of labour to fall
- (iv) The tendency of the necessaries of life to become dearer

D.

Accidental causes and temporary effects

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