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Economists' flight from ontology

by
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There is no doubt that ontological questions are not very popular among economists.[1] Those who practice a science do not exist to discuss such metaphysical questions; still there are some such questions that they can hardly avoid. Here I am thinking of questions concerning the very stuff from which are constituted the entities these scientists pretend to study. They are, from a slightly different point of view, questions whose answers allow us to characterise in a philosophically satisfactory way the nature of a certain science's subject-matter and to see how it is related to the suject-matter of other sciences. By contrast with purely epistemological or methodological questions, what I call ontological questions are ontological in the sense that they concern not how to know but what is known[2].

One must admit that throughout the history of their discipline, the experience of economists has been that such questions are of that frustrating sort that generally open unending debates. It is therefore not surprising to observe that many of them have apparently concluded that by raising questions about the nature of the entities they are analyzing they are opening a Pandora's box from which must continually flow new problems and paradoxes which would much better have been avoided. To be more precise, this is strictly true about neoclassical economists; I would even say that what is generally considered as the great success of neoclassical economics is closely linked to this flight from ontological questions. Conversely, it will be argued in this paper that the various marginal currents in economics are marginal largely in so far as they make a central place, each of them in its own way, for such cumbersome ontological questions. In other words, I will claim, the whole history of economic thought can be read as a long story of the way economists have coped or refused to cope with this type of ontological questions.

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1 The author thanks Robert Nadeau and Bruce Toombs for their helpful comments as well as the SSHRC (Ottawa) and the Fonds FCAR (Quebec) for financial assistance.

2 Throughout this paper, I use the term "ontology" to accentuate this opposition to "epistemology" and I reserve the term "metaphysics" to underline somewhat larger philosophical contexts.

It is important to say, however, that neoclassical economists' abhorrence of questions concerning the nature of their subject-matter does not make them less confident that they are doing *empirical* work. Most neoclassical economists tend to insist upon the empirical character of economic science as much as they tend to avoid discussing the precise sense in which the empirical content of their analyses is related to the real word. In this context, it is easy to understand the extraordinary influence exerted on economists by Milton Friedman's methodological paper.[1] What Friedman delivered to economists were apparently compelling reasons for claiming that they could devote themselves to a strictly empirical science (or a strictly "positive science" as Friedman preferred to say) while making a virtue of avoiding embarrassing questions about the meaning of their assumptions or indeed about the very nature of their subject-matter. After many years in the uncomfortable and ambiguous position of scientists practicing a science dedicated to solving purely theoretical puzzles related to rather unrealistic situations, most economists received with enthusiasm the possibility of making empirical predictions in various areas, however loosely tested those predictions might have been. No longer would they be impeded by the paralyzing necessity of testing the validity of unrealistic assumptions or of inquiring about the ontological consistency of their subject-matter.

Ontological questions in economics and other sciences

Such a flight from ontological questions is surely not typical of what one finds in other sciences. While physicists are probably not much more enthusiastic about philosophical questions than economists are, they usually profess both a materialistic view according to which material particles constitute the fundamental stuff of the world they are studying and a deterministic view according to which a standard type of causal relations prevails in their domain. When a theory like quantum mechanics raise doubts about this ontological view of the universe, discussions intended to clarify the real nature of matter and of causality become still more closely associated with the development of science. This does not mean that physicists should necessarily be perceived as materialistic or deterministic philosophers since they are not necessarily ready to extend this materialistic approach to the study of mind. Insofar as their physical theories are concerned, however, they usually consider that it would be difficult to dissociate such ontological conceptions from their scientific analysis.

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1 "The Methodology of Positive Economics", in Friedman 1953, p. 3-43; for a discussion of Friedman's paper, see Lagueux 1994.

In any case, such an attitude did not prevail throughout the history of science and the process that brought its generalization has largely been a result of "metaphysical" debate among scientists. From this point of view, the history of biology is more revealing still, since it was not so long ago that biologists were either vitalists or mecanicists (or materialists). It is during the course of this century that most of them have definitively repudiated vitalism and committed themselves to the idea that organic phenomena are explainable through a better knowledge of the chemical constituency of matter and ultimately through a better knowledge of the physical movements of particles.

For many psychologists, such questions are not yet solved, but the crucial point is that they cannot totally avoid this issue if they want to develop their science. The question, whether mind is ultimately reducible to an arrangement of material particles or a irreducible substance of a different type is not unimportant for the progress of psychology. Similarly, sociologists are faced with a similar question of reductionism in the continuous debate between holism and individualism. Here again, the point is not who is right between materialists and anti-materialists or between holists and individualists but to see that it would be very difficult to make significant steps in these sciences without addressing questions concerning the nature of mind or of society. It is true that one could defend a holistic predictive sociology which would not bother with assumptions concerning the rationality of individuals. In this case, however, one would have to engage in a discussion of other ontological questions about the nature of a society and about what constitutes social forces. Finally, other social scientists tend to adopt attitudes towards such ontological questions which are reducible to one of those that we have met either in sociology or in psychology or in biology.

Neoclassical economists, however, while dealing with a particular type of human behavior, remain equally removed from all of these attitudes. This phenomenon might be explained in part by the fact that economists had developed their own methodology long before the practitioners of those sciences, but, in any case, it is clear that economics occupies on this ground a very peculiar position. Indeed, one of the most intriguing features of economics is the floating character of its subject-matter and the neoclassical economists' refusal to take sides on issues such as those just illustrated in the case of other sciences. Neoclassical economists, even when they are not committed to liberalism[1], are ordinarily very

[1] Incidentally, I consider that there is an important distinction to be made between neoclassical and neoliberal economists, but *in the context of the present discussion* (i.e. their attitude towards ontological questions) such a distinction has little significance.

reluctant to treat economic systems and economic forces as relatively autonomous entities. Any attempt to move in this direction indeed would look too much like a revival of some brand of Marxism or, at least, of sociologism to be very attractive to those economists. If pushed to reveal their preference on this question, they would definitely incline towards individualism rather than towards holism. But that does not mean that they would follow Hayek or other thinkers seriously committed to individualism by discussing the implications of such an orientation or by spelling out the nature of individuals referred to in this context. When Hayek and other Austrian economists refer to the subjective character of the mind and try to take advantage of intimate knowledge of rational human behavior, they are quickly denounced by their more orthodox colleagues as "old-fashioned" economists. The implications of their subjective and philosophical considerations about intentional beliefs and goals do not sound very convincing to economists who pretend to genuine science.

But this does not mean that those science-oriented economists would be particularly sympathetic to Alexander Rosenberg's thesis on beliefs and goals. Rosenberg suggests that economists who want to be consistent in dropping intentional concepts inherited from a "folk psychology" should turn towards neurophysiology and cognitive sciences for new conceptual bases[1]. Typically, neoclassical economists would prefer to continue using a conceptual apparatus which is nothing but a highly idealized, formalized and sophisticated version of "folk psychology" rather than raising ontological questions which would force them either to acknowledge the limitation of their tools or to start over again at zero and begin work on a brand new basis.

We should hardly expect neoclassical economists to recognize themselves in this uninspiring picture which seems to represent them as having their heads in the clouds. After all, they are analyzing markets, which are so closely associated with the world of business and what could be more concrete than the world of business? It is true that economic theory is highly abstract, but this is hardly what distinguishes it from other sciences, since physicists also systematically construct highly abstract models. At any rate, the problem is not that neoclassical economic models are too abstract; it is that neoclassical economists refer to entities which they leave systematically unspecified and which remain unrelated to entities analyzed by other sciences. Indeed, when asked what type of entity a market is, economists tend to answer in a way which leaves a lot of room for interpretation. It is a structure which makes systematic exchange possible, but exchange has to be specified in term of exchangers and/or of

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[1] See Rosenberg (1992), ch. 5

exchangeable commodities. However, on the one hand, economists would strongly resist any attempt to identify exchangers with human beings characterized by typical psychological features. And on the other hand, from an economic point of view, exchangeable commodities are characterized by their value, but economists would resist still more strongly any attempt at reducing value to either material components or psychological ones.

Ontological questions and classical economics

It is interesting and instructive to remember that this situation is peculiar not so much to economics among the sciences as to neoclassical economics among the various currents in the history of economic thought.

At the earliest stage of the history of economics, there was no such thing as a psychological science. Consequently, the idea of analyzing economic exchanges through a better understanding of psychological behavior of individuals would not have sounded very attractive. However, in the second half of the XVIIIth century, the idea of a flow of wealth which would be subject to economic laws of value, just as the movement of the planets was subject to the astronomical laws, looked much more promising. Consequently, the agenda of most economists of that time included analyzing the nature of wealth itself to find out what makes wealth valuable. In one sense, this idea was far from being new. The ancient myth of Midas, the Aristotelian theory of money as a commodity, mercantilistic views about gold and physiocratic ideas about the agricultural source of value, while originating in quite different perceptions of wealth, all suggested that the subject-matter of the economic science, which was then still to be built, would be a peculiar type of material (or at least objective) entity. Actually, economic science was born in this context, but its "birth" required a supplementary element in the perception of its subject-matter. Emphasis had to be placed on the mechanism explaining the flow of wealth rather than on its quasi-mystical material components. To be meaningfully compared to the movement of the planets, the flow of money and commodities had to be directed by an impersonal mechanism which was to be held responsible for the fact that order seems to prevail naturally without requiring the rather disturbing interventions of political authority.

David Hume's famous article on *The Balance of Trade* illustrates this in a particularly clear way. According to Hume, England's gold reserve could be reduced by four-fifths without causing serious problems to the country since it would be replenished automatically

through price mechanisms[1]. More exactly, Hume added, such a flight of gold out of the country would be literally impossible since the price mechanism would start to act progressively to maintain a relative equilibrium before any significant change in the gold reserve could occur. Hume compared this to the hydraulic mechanism that maintains in equilibrium the level of a liquid in communicating vessels, by letting this liquid freely flowing between branches after any change of its level in anyone of them. This hydraulic metaphor, which will often be re-used in the analysis of money, draws attention to the *material* character of the forces at work. It is important to notice that Hume did not focus at all on the causes of this monetary mechanism, which were necessarily based on the rational behavior of buyers looking for cheap commodities. For another century, this dimension was to remain quite secondary — or rather the human impetus involved in it was to be considered self-evident and not subject to analysis. Thus, the required shift of emphasis from the materiality of money to the mechanism controlling it did not really distract from the prevailing idea according to which the key to an understanding of economic mechanisms had to be found in the very nature of the value of commodities. For the next century, the development of economics was to be closely associated with an ontological inquiry which bore on the nature of exchangeable commodities rather than on the nature of exchangers' behavior. Thus, classical economics was ontologically grounded on the association of such a mechanism with the idea according to which the exchangeable value of a commodity was based on its labor *content*. Since, by this time, a main concern of economists was to provide a substantive basis for an infant science which was eagerly looking for just such a thing, the popularity of the labor theory of value with classical economists largely rested on its ability to provide such a substantive basis for an economic science whose subject-matter was characterized in this context as the production and distribution of a *mass* of value. This was similar to the way in which various representations of matter (for example, as an ethereal fluid or an aggregate of particles) had provided, in different periods, different substantive bases for what constituted the subject-matter of physics.

With Ricardo, an autonomous economic science took shape but had to deal with the problem that value had finally turned out to be an insufficiently substantive foundation for it. For, as Ricardo saw very clearly, the only way to measure value is by reference to another value; but since values can change over time, how can one know whether an observed change in the value of a good is actually a change in the value of the good itself or attributable to a change in the value of the good by which the first value was measured? We could compare

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1 "Of the Balance of Trade" in Hume 1970, pp. 62-64.

this situation to the one which would prevail in a universe containing *only* living bodies — say, fir trees which are assumed to be intelligent enough to measure their own growth. In such a universe, the only way for the fir trees to measure their respective yearly growth would be to take a member of their group as a measuring rod. However, since this fir tree used as a measuring rod would itself be growing, unlike our own relatively fix meters, it would be nearly totally useless for determining *which* of the firs had grown and still less so for measuring *by how much* they had grown. Indeed, the firs would never be in a position to know whether their real growth, when measured by the fir-rod, was not undercut by the growth of the rod itself. A proportionally larger growth of this living rod could even give a result stating that a fir had shrunk when actually it had grown! Such was the problem which looked quite troublesome for Ricardo since value could not be measured by anything but another value subject to change. This methodological problem of measuring was turned into an ontological problem by the fact that its solution was sought for in the ontological qualities of a standard of value which can reasonably be considered a substance. It was essentially for this reason that Ricardo considered a labor theory of value to be particularly advantageous. Indeed, if the substance of value is a *quantity* of labor time, then it is possible to measure value by the quantity of this constitutive ingredient; and such a quantity (of labor time), being not itself a value, was not subject to constant change. However, after careful analysis, Ricardo had to conclude that, unfortunately, value cannot be reduced to a pure *quantity* of labor time. Rather, given the presence of profit, it necessarily depends also upon the *value* of the labor itself. Thus, Ricardo's inexorable conclusion was that not only a certain quantity of labor but also the value of this labor was involved in the determination of the value of most commodities, a fact which was significantly at odds with the alleged substantive character of value.

Ricardo was particularly bothered by this state of affairs. In the *Essay* published two years earlier[1], he did not meet this type of problem when developing his theory of rent, since he then assumed that the only exchangeable commodity was corn. In this fictional situation, the value of any commodity is measured by the amount of corn it contains; consequently, there is no special problem in measuring and analyzing value as an entity. But of course, Ricardo was aware that the world is made of many different types of commodities and that his fiction had to be replaced by a more sensible analysis in terms of value which would give rise to the devastating conclusion referred to above. As is well known, Ricardo resigned himself to

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[1] Ricardo David, Essay on the Influence of a Low Price of Corn on the Profits of Stock in Ricardo 1951-58, Vol IV, pp. 9-41.

basing his economic analysis on a approximation of a theory of value[1], but he never abandoned his search for a solution to the central and troublesome question of the nature of value[2]. In any case, Ricardo's approach was very influential over a long period of time, but it finally turned out to be a dead end. However, with the development of economic thought, the metaphysics which guided it was unexpectedly revived in two quite different contexts which have to be discussed now.

Marx was an acute critic of many aspects of Ricardo's theory, but he seems to have been fully convinced of the relevance of Ricardo's ontological questions. He understood perfectly well that treating value as something which can be measured only by another value made impossible the construction of a solidly grounded economic theory. Consequently, he decided to solve Ricardo's problem in a radical way by literally identifying value and labor time. For Marx, labor time was the unique constituent of value and the very substance of any type of wealth. For example, the wealth of capitalists derived from the accumulation of masses of profits; thus, it was crucial for Marx to claim that sheer value, and consequently part of the labor time of workers, was the very substance of profits. Incidentally, his designation of profit as "surplus-*value*" was meant to emphasize this aspect of things. Naturally, to uphold such a view, Marx had to develop a more elaborate metaphysics of value implying the notions of "abstract labor" and of "socially necessary labor". More crucially, he was forced to disentangle the notion of value from the notion of price, since his prices were Ricardian prices which, as we have seen, could not be strictly proportional to the quantity of labor contained in the priced commodity. This contradiction, for Marx, was merely apparent and he estimated that he would be able to solve it with the help of his theory of transformation of values into prices. This solution testified in a spectacular way to Marx's profound conviction that labor time was the *substance* of value. His idea was that even if the price of a single commodity differed from its value, the total price of all commodities produced by labor is necessarily equal to their total value which is *conserved* and only redistributed over the various commodities. Since, according to the prevalent thermodynamics of his time, any substance had to be conserved, the total sum of labor time (i.e. of value) had to be conserved when transformed into prices[3]. Marx's solution was submitted to severe attack from economists

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1 See the section VI "On an Invariable Measure of Value" of the chapter I of On the Principles of Political Econmomy, and Taxation in Ricardo 1951-58, vol I, pp. 43-47.

2 See especially the unfinished paper entitled "Absolute Value and Exchangeable Value" in Ricardo 1951-1958, vol IV, pp. 358-412.

3 See Lagueux M., "Le principe de conservation de la valeur" in Dostaler G. (ed.), 1985, pp. 107-125.

before being mathematically corrected and reinterpreted by Bortkiewicz[1] in a way that voided it of its ontological meaning. Since then, the story of Marxist economics has been largely dominated by debates between those, like Morishima[2], who attempted (not without cost from a Marxian point of view) to make Marx's theses compatible with the mathematical analyses of the dominant economics and those who tried desperately to save the economic significance of such purely ontological concepts as abstract labor.

Joan Robinson denounced the metaphysical character of the use made by Marx of his concept of value[3], but the Cambridge debate about capital, in which she was a key participant, turned out to be closely linked with Ricardo's ontological question concerning the nature of a meaningfully measurable value. It is true that this debate was a highly technical one involving comparative rates of interest and capital-labor ratios, and one which certainly did not *directly* address any ontological questions. However, the central question about the unit in which an aggregate amount of capital can be measured was ultimately related to the debate about the substantive character of value. The idea that the value of an aggregate amount of capital cannot be determined without previous knowledge of the rate of interest (because a variation in the rate of interest would affect is value) is a consequence of the problem that Ricardo tried desperately to solve by looking for a substantive standard of value[4]. Both Robinson's proposition that capital be measured in labor units subjected to interest and Sraffa's homothetic commodity measurable in terms of other commodities have been adopted (or invented) to solve this problem. In such systems of measurement, value *can* be associated with something substantial (labor or commodities) and *can* be measured by the amount of this substance: *more of such a substance means more value*.

In some sense, what the neo-Ricardians denounced in the Neoclassicals was their uncritical use of a measuring rod which can provide only a rough approximation when, in their allegedly empirical analysis, they refer, for example, to aggregate functions of capital. Indeed, such a way of measuring violates an ontological requirement for a substance which is

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1 Bortkiewicz, Ludwig von, "On the Correction of Marx's Fundamental Theoretical Construction in the Third Volume of *Capital*" in Sweezy (1949).

2 Morishima (1973).

3 Robinson (1964), p. 39; see also Robinson (1942).

4 To return from this debate about aggregation of capital to the ricardian idea that the *value of labor*, and not only its quantity, affects the value of the commodity to be measured (the capital in the present case), one has only to remember that, in this context, the rate of interest and the rate of profit are more or less interchangeable notions and that, for Ricardo, the rate of profit and the (real) wage rate (i.e. the *value of labor*) were interdependent in the sense that a change in one implied an inverse change in the other.

used as a measuring rod: for one who considers that the value of capital is an ontologically meaningful magnitude, an approximation which cannot be valid in principle cannot be an acceptable measure. The surprising way this noisy debate of the sixties faded out is significant on this ground. According to most of their critics, the neo-Ricardians were unable to demonstrate any empirical consequences of the theoretical flaws they had successfully illustrated in the Neoclassical analysis. For example, they were unable to show, as Blaug[1] almost required of them, that the reswitching phenomenon could be a good reason for underequipped but overpopulated countries like India and China to *not* favor labor-intensive techniques. Neo-Ricardian economists contented themselves with showing that, on purely theoretical grounds, it is not sensible to measure the value of capital or of any other commodity with units unfitted for such a job. And they offered convincing arguments to show that measuring with inappropriate units can, in principle, generate contradictions and cause us to miss some theoretical possibilities. Proceeding with inappropriate units of measurement is surely not *ontologically* sensible since no real entity should be involved in contradictions and since theoretical possibilities should be considered as integral parts of any real entity; such metaphysical subtleties, however, after making them nervous for a moment, ultimately left neoclassical economists totally indifferent. For them, any consideration associated with their image of science based on "empirical" predictions and mathematical models kept precedence over any other considerations and especially over anything which was akin to a metaphysical consideration.

Whatever the conclusion of this debate, it is clear that both Marxians and Neo-Ricardians, as well as Ricardo himself, attempted to ground economic analysis on an ontologically sensible foundation. It is also clear that, for them, contradictions could not be avoided as long as the economic value of exchangeable commodities was not measured in ontologically meaningful units. In other words, the problem with neoclassical economics was not that it was involved in strictly *logical* contradictions at the level of mathematical models, it was that a theory which provided only a rough approximation of a phenomenon, without taking care of possible theoretical cases, was neither a theory that had given a correct account of the structure of the real world nor, to use one of Rosenberg's favorite phrases, one which "cut nature at the joints". It is true that Ricardo himself decided to base his whole economic theory on such an approximation of a theory of value, but immediately afterwards and for the rest of his life he placed on his agenda the necessary task of devising a more satisfactory

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[1] Blaug Mark (1980), p. 208.

theory of value. It is precisely the flat refusal by the neoclassical economists to put a corresponding point on their agenda that Neo-Ricardians so severely condemn.

Ontological questions and marginalism

In any case, neoclassical economists might observe that the obsession with finding a unit by which to measure value in a way that makes the measurement independent of any variation in the rate of profit derives from the old classical conception according to which value as such is the fundamental entity to be anchored in the real world in an ontologically sensible economic theory. But, they would argue, since the so-called marginalist revolution, this "objective" conception of value has been defeated. Since Jevons, Menger and Walras, the classical search for the objective ground of economic value looks like a kind of fetichism or, at least, like an unjustifiable reification.

However, for the founders of marginalist economics, such a view was based on a "subjective" conception of economics. Exchange was no longer ontologically based on exchangeable commodities but it *was ontologically based* on the very nature of exchangers. Just as during the previous century most economists had been very careful in characterizing the type of entity that exchangeable value was supposed to be, most of the pioneers of marginalism were equally careful in characterizing the type of entity that exchangers were supposed to be. And just as the classical theory of value was completed by mechanisms implicitly involving the behavior of exchangers, the early neoclassical (or marginalist) theory involving the psychology of subjective exchangers was completed by a "subjective" theory of value. In both cases, these theories about the nature of value or about the nature of the exchangers constituted a kind of ontological ground for economic analysis. For marginalist economists, economics was an ontologically sensible enterprise involving human beings conceived as psychological entities from whose decisions the value of exchangeable commodities derived. It is easy to understand that, for those who adopted this conception of economics, any search for an objective foundation of value looked necessarily superfluous and even preposterous. However, one must keep in mind that the adoption of such a conception implied that it was the psychological entities which had to be defined in a proper way.

In the early period of marginalism, psychology was itself in its very first stages and economists had relatively little to draw upon from this science when characterizing the rational behavior of the decision-making entities they were analyzing. Even if the germs of a materialist explanation of the mind based on an analysis of the brain was already present long before this period, the standard view (while still confusedly worded) was — and remained for many decades to come — that the human mind was a subjective entity with beliefs and goals, capable of making rational decisions in accordance with these beliefs and goals. The so-called Austrian economists systematically developed a very consistent economic theory based on such a metaphysics of subjectivity. Some of them took advantage of this metaphysical position to claim that the various principles of economics can be derived *a priori* from the intimate knowledge than economists can get from the fact that they are themselves human beings involved in processes of decision and action. Such a radical stance generated various paradoxes and difficulties that have been often discussed since then, but no one can deny the consistency of the ontological commitment of those economists. As economists, they considered that their task was to analyze the deliberate and subjectively rational actions of human beings, actions that were conceived as unexplainable by purely mechanical causes, and the consequences (intended or not) imputable to these actions.

After a long period of relative ambiguity on this ground, those who were to be perceived as "orthodox" neoclassical economists became more and more reluctant to commit themselves to such a radically subjective view, especially considering how far its claim to *a priori* validity was inimical to the usual canons of empirical science. However, the rejection of this metaphysics of subjectivity does not imply an endorsement of the opposite materialist ontology which, in psychological circles, acquired more and more credibility with the development of neurophysiology and of cognitive science. Rather, neoclassical economists carefully avoided taking sides on this crucial ontological issue dividing psychologists. It is no secret that they systematically managed progressively to dissociate their theory from any psychological interpretation. Each step in the progressive dissociation of economics from its psychological basis was received as a remarkable success. For example, the adoption of ordinal utilities and of revealed preferences theory have been important steps in dissociating economic theory from the cumbersome questions (measuring an amount of utility, intrapersonally assessing goals and beliefs, etc.) linked with its psychological foundation. However, a direct implication of this welcome dissociation from its psychological basis was the rejection of any ontological basis. Economic theory became more and more a floating theory potentially applicable to any kind of situation involving rational decision-making conceived as the maximization of any variable.

This new orientation was strongly reinforced by the fact that the move from the objective to the subjective theory of value (or from the exchangeable to the exchangers), which characterized the marginalist revolution, was closely associated — systematically with Walras and partially with Jevons — with the adoption of the fascinating and powerful mathematical apparatus that physicists had perfected during the first part of the XIXth century, as has been convincingly documented by Mirowski[1]. However, the price to pay for the transposition of the physicists' model to economics was a dissolution of the ontological characteristics of the economic world. Learning to apply physicists' tools in the construction of more and more formalized economic theories means, to a large extent, learning to void the economic world of its ontological characteristics in such a way that tools developed for use in a quite different physical world can be applied to this unsubstantial economic world without serious resistance.

Less and less closely linked to a concrete and specific world, economic theory became more and more something like "a branch of mathematics" to use Alexander Rosenberg's wording. Naturally, most neoclassical economists object strongly to such a characterization, because even if they place the elaboration of abstract theorems over anything else, they nonetheless would claim that the ultimate goal of their science is the production of valid predictions about actual economic world. However, as is generally admitted, their record on this ground is far from matching their success at developing purely formal mathematical theorems. If neoclassical economics is credited with much more prestige than other social sciences, this is due to its highly sophisticated mathematical achievements and not, as with physics, to an equally impressive record of predictions and applications, since most of predictions and applications of neoclassical economics are rather vague and rarely successful[2].

It is true that this formal character is compatible with the normative role to which Friedman opposes its positive ideal, but such a role also remains purely formal and does not imply for economics a specific substantive basis which would be ontologically meaningful, any more than it does for mathematics, which can also be considered a normative science. Moreover, as is well known, the normative decision theory derived from neoclassical economics can be applied without limit to any domain of rational decision-making, including politics, military strategy and even parenthood or drug consumption, as Gary Becker's work

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1 Mirowski Philip (1989), *More Heat than Light*, New York, Cambridge University Press, 1989. See also Rosenberg's views about "extremal theories" in Rosenberg 1979.

2 For an eloquent sampling of economists' critical assesments of predictions made by their colleagues, see Rosenberg (1992), ch. 3

has shown[1]. Clearly, the neoclassical economists' flight from ontology is not due to laziness or fearfulness; it has the same origins as their most successful theoretical achievements. This can be easily illustrated by the fact that attempts to take care of any of the *observable* consequences of the strong postulates (utility maximization, perfect knowledge, etc.) that are usually required by the formalized models of economists would often destroy all that was gained in elegance, simplicity and power by the importation of physicists' models.

Friedman's methodological attitude was effective in legitimizing economists' refusal to raise cumbersome questions about the character of the world they were analyzing, but such a systematic flight from ontological questions could hardly satisfy everybody in the profession for very long. Consequently, in the last decades, various attempts were made to anchor this theory in a more concrete world. The recent revival of sympathy for institutionalism was surely a manifestation of dissatisfaction with the purely formal approach to economics. However, in the context of a science rather inimical to sociologism, institutionalism is easily associated with the psychological analysis of behavior. Thus, with researchers like Herbert Simon[2], the analysis of beliefs and goals came back in the foreground; but this analysis was developed in the institutionalized context of bounded rationality. There is no doubt that such analyses are not of an ontological character, but they do go a long way toward bridging the gap left by Neoclassicals between economic analysis and the psychological entities which are supposed to play the role of the exchangers in mathematical models.

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In any case, once questions are allowed again about the nature of these entities, it becomes difficult to avoid for long the multiple questions sugggested by the key ontological issues related to materialism and determinism. What is the ontological status of the human mind? Has the human mind the ontological status of a subject characterized by private access to its interiority? Is the human mind ultimately reducible to the neurophysiological properties of the brain? What is the ontological status of human action? In what sense and to what extent is freedom a crucial condition of human action? In what sense and to what extent is human

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1 Becker 1976.

2 Naturally, some economists usually associated with neoclassicals (Ronald Coase, for example) are representative of intermediary cases. Without systematically questioning the ontological status of their subject-matter in a way conducive to developing substantially different economic theses, these economists do not accept the Friedmanian legitimization of indifference towards ontological questions. Consequently they look for a more concrete analysis of economic experience instead of playing the formalization game of their colleagues.

action rational? Do beliefs and goals really exist or are they purely epiphenomenal manifestations? In what sense are they intentional? Are those sciences which are based on them purely "folk" sciences to be replaced by sciences with more materialist bases?

If neoclassical economists tend to avoid these questions, neo-Austrian economists give them a central place in their analysis. They took sides in this emerging debate by strongly defending a metaphysics of subjectivity very explicitly centered on the idea of free human action based on intentional beliefs and goals. Their commitment to such a view brought them to reject the mechanistic and formalist approach of their neoclassical colleagues, but since these colleagues implicitly invoked the same metaphysical conceptions without seriously discussing them or spelling out their implications, it was with philosophers rather than with economists[1] that the neo-Austrians found themselves engaged in significant debate.

The opposite ontological thesis on questions concerning the nature of human action is the materialist and determinist one. Given the neoclassical economists' flight from metaphysics, this thesis has not been very explicitly defended by those economists whose inclination towards "positivism" strongly conflicts with the Austrian subjectivist view. Consequently, the implications for economics of a materialist theory of human action and of human mind are far from having been systematically spelled out. However, the recent connection of the methodology of economics with the philosophy of action and still more with the philosophy of mind, for which Rosenberg is largely responsible, should force economists who are anxious about the ontological status of the variables of their models to give much more attention to these questions.

My point is in no way that the materialist answer to these questions is the most appropriate, nor that it would bring a solution to the problems met by economists. Materialist theories of mind are full of difficulties about which Rosenberg himself is remarkably aware; up to now, they remain an option which might look more attractive to many philosophers but which is just a metaphysical option among others. My point is that those metaphysical questions which might sound strange to economists cannot be avoided forever since they are closely related to the theory of (human) rational decision that economics pretends to be. But as long as overformalization will continue to bring to economics the prestige of a science

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[1] This was paradigmatically the case of Hayek. A rare exception to this rule is the short debate opposing Kirzner to Becker. But in this case, Becker defended, quite atypically, a thesis on irrationality which anticipated, to some extent, the opposite ontological trend evoked in the next paragraph of the present paper. On the meaning of this last debate see, Lagueux (1993).

comparable to physics by the sophistication of its theorems and, from this point of view, to place it far ahead of the other social sciences, there is a pretty good chance that the economists' flight from cumbersome ontological questions will be going on for a long time yet .

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