1. Introduction

In Volume 2, No. 2 of Methodus, Henry Woo presents a stimulating and challenging "broad view of economic methodology" in which he draws a crucial distinction between scientific reduction, on the one hand, and philosophical reductionism on the other. The former "contributes to... advances in science by way of subsuming an existing corpus of knowledge under a more unified scheme" (Woo, 1990, p. 61). Methodologically speaking, scientific reduction is important in that it eliminates incompatibilities or reconciles anomalies, while cognitively it enhances the transparency of existing theoretical frameworks. Philosophical reductionism, however, is both dogmatic and degenerative in that it "pre-specifies" in a quasi a priori manner "the direction of the reduction" or "the relation between the objects of reduction and the reducing variables" (Woo, 1990, p. 63). Woo correctly presents physicalism and behaviorism as clear exemplars of philosophical reductionism. Moreover, Woo suggests that we conceive of scientific reduction and philosophical reductionism as polar opposites between which one can locate the methods of different disciplines, especially economics. Because of its autonomy vis-a-vis psychology in particular, one might expect economics to be diametrically opposed to philosophical reductionism. Indeed, according to Woo, its autonomy does imply that economics "necessarily rejects" philosophical reductionism (Woo, 1990, p. 64). Paradoxically, however, this self-same autonomy locates it very close to philosophical reductionism which he calls "metaphysical reduction". The latter is "a kind of reduction approach whereby certain sets of phenomena or entities, or explanatory schemes of a lower level, are subsumed under a broad theoretical framework built upon some highly encompassing structural features of reality. These features are partly ontological and partly epistemological in character" (Woo, 1990, p.65). In particular, the neo-classical concepts of equilibrium, reversibility, rationality et alia are epistemic archetypes of a metaphysical reductionist program serving to standardize the interpretation of empirical economic data which, unlike scientific reduction, restraints the uninhibited proliferation of research data. Moreover, neo-classical economics is so general "there is no way any set of data could conclusively falsify the status of the theory in question" (Woo, 1990, p. 66). Indeed "the increasing incompetence" of neo-classical economics in furnishing explanations or predictions, in Woo's opinion, requires that economics should move to the scientific reduction end of the spectrum and, furthermore, it should not to be too defensive about its autonomy.

In the following discussion we wish to explore how a constructive empiricist approach to economic methodology could accommodate Woo's intriguing critique of orthodox economic theory. In particular we will endeavor to show that constructive empiricism espouses a modified view of scientific reduction and, in accepting the major lines of Woo's critique of orthodox economics, unequivocally concludes that the latter is empirically inadequate. In section two the constructive empiricist's explication of the relationship between scientific reduction and explanation is developed while section three expands on the related matter of the ontological ramifications of an empirically adequate, economic theory.

2. Scientific Reduction and Explanation

In drawing a clear and sharp distinction between scientific reduction and philosophical reductionism, Woo is correct in pointing out that scientific reduction "contributes to advances in science by way of subsuming an existing corpus of knowledge under a more unified scheme" (Woo, 1990, p.61). However, he immediately adds: "As a result greater explanatory power is often achieved with a successful reduction". The constructive empiricist, while accepting the contribution of scientific reduction to the progress of human knowledge, unequivocally rejects the above additional claim vis-a-vis explanation. Similarly he would disagree with Woo's characterization of scientific reduction "as trying to explain something known, or not fully-known in terms of fewer variables" or that it "takes the form of explaining some higher level phenomena or entities in terms of some lower level phenomena or entities" (ibid. Italicours). By explicitly articulating an inextricable connection between the theoretical endeavors of
scientific reduction and scientific explanation, Wool is giving expression to a widely held, tacit assumption both in the philosophy of science in general and economic methodology in particular, namely that the central aim of economic theory or a scientifically reduced theory is to explain. The constructive empiricist rejects this prevalent assumption. As previously demonstrated (Boylan and O’Gorman, 1990), the constructive empiricist begins his methodological reflections with the thesis, developed by Quine and others, that all descriptions are theory-laden. In particular, in so far as scientific reduction impinges on economic methodology, it is concerned with theory construction and hence it does not serve any explanatory function at all. The aim of scientific reduction in the domain of economics is the construction of a unified economic model which is empirically adequate, i.e. which furnishes appropriate and accurate descriptions of economic activity in historically located social structures.

In particular, the constructive empiricist would not accept Wool’s characterization of the ontological ramifications of scientific reduction. According to Wool, scientific reduction presupposes “that reality is stratified into layers and that higher level structures depend on the existence of lower level structures and their operative principles”. This interpretation of the ontological ramifications of scientific reduction is in keeping with a realistic construal of scientific method. The constructive empiricist, however, rejects this realistic interpretation. A scientific reduced theory may be stratified into layers with a higher-level empirical stratum and a lower level more theoretical stratum. Such a theory furnishes a model of the empirical world. However, if the lower-level, more theoretical stratum postulates theoretical entities which are unobservable in principle there is no question of maintaining that reality is similarly stratified.

According to constructive empiricism we have not got any rational grounds for assuming that lower-level unobservable in principle, theoretical structures are referring to real structures which generatively produce or cause the observable phenomena. We will return to this crucial thesis in the next section.

Before addressing this topic, however, a few words on how the constructive empiricist radically reconstrues the explanatory task of economics or any scientifically reduced research program may be in order. This radical reinterpretation of scientific explanation is accomplished by drawing a sharp distinction between theoretical and applied economics and locating explanation in the latter. The aim of theoretical or pure economics is to construct a comprehensive, unified model of the economic order and, as Wool points out, scientific reduction may play a significant part in this exercise. These models, however, do not explain. Their central function is to provide theory-laden, accurate descriptions of economic activity, institutions and structures. Economic explanation is relocated in the context of applied economics. Why questions occur in specific contexts and the applied economist chooses his salient explanatory factors from the observable events or mechanisms isolated by his theoretical model rather than from models in other scientific disciplines or from myths or common sense. The severing of the link between economic theory and economic explanation is a principal cornerstone of constructive empiricism and thus scientific reduction has no pure explanatory dimension in this challenging methodological framework.

3. The Role of Ontology: A Re-interpretation

As already noted, Wool presents physicalism and behaviorism as clear examples of philosophical reductionism and correctly concludes that this form of reductionism is both dogmatic and degenerative. The constructive empiricist would agree with this conclusion. Wool, moreover, in an intriguing way, argues that, since economics has a degree of autonomy vis-a-vis psychology, “it necessarily rejects the thesis of philosophical reductionism” (Wool, 1990, p. 64). Clearly Wool is correct in arguing that, by virtue of its autonomy vis-a-vis psychology, economics must reject any philosophical reductionist program reducing economics to, say, behaviorism. However, economics could espouse a philosophical reductionism of a different type. One of the characteristics of philosophical reductionism is its commitment, without due openness to the rigours of scientific enquiry, to a specific set of reducing variables. Methodological Individualism, which influences certain formulations of economics, is such a philosophical reductionist program. It specifies in advance of all empirical investigation that economic structures are in principle reducible to individualistic parameters. However, it is possible that some economic structures are real social entities which exercise causal influence and which are not reducible to individualistic parameters. Scientific reduction would keep an open mind on this topic and would wait for future scientific research to decide the matter. In short the autonomy of economics vis-a-vis psychology while, necessarily rejecting the philosophical reduction of the former to the latter, does not necessarily reject philosophical reductionism.

The autonomy of economics, however, may result in a refusal to interface with neighborhood
disciplines and, according to Woo, this has ironically resulted in economics being subsumed into metaphysical reduction, a category which is closer to philosophical reductionism than to scientific reduction. As we already noted, in a metaphysical reduction certain lower-level empirical phenomena are subsumed under broad theoretical features “which are partly ontological and partly epistemological in character”. In particular, the epistemic archetypes of metaphysical reduction are partially ontological in that they “represent or reflect the broad outlines of reality or the basic properties of the causal processes, generative mechanisms or operating principles behind manifest phenomena” (ibid.). However, “they need not reflect reality in its working or organising details”.

Certainly the constructive empiricist would agree with Woo that theoretical or pure economics “makes repeated attempts to simplify its core theoretical framework.” Indeed he would not challenge Woo’s thesis that the notions of rationality and equilibrium are central archetypal concepts of orthodox economics. However, he has conceptual difficulties with the manner in which epistemic archetypes are said to be partly ontological. As we have already seen, according to constructive empiricism, the principal aim of an economic theory is the construction of a unified model which is empirically adequate. Moreover, if there is a conflict between the demand for unification and empirical adequacy, the constructive empiricist will sacrifice the former.

Nevertheless, in attempting to construct a unified model, the constructive empiricist may introduce theoretical terms with a “high level of generality” and “apparent openness” (Woo, 1990, p. 65). While these terms are partly ontological and partly epistemic, they are not ontological in the sense of constituting the fundamental explanatory premises of the economic world. In particular, they may not represent “the broad outlines of reality or the basic generative mechanisms......behind the manifest phenomena.” The constructive empiricist is in total agreement with Woo’s claim that pure economics “is constrained by a demand for realism” (Woo, 1990, p. 66). Its realism or ontological dimension, however, is explicated in terms of the model’s ability to furnish accurate descriptions of economic activity, institutions and structures. The core framework, in so far as it uses very general and open-ended archetypes, may not depict, however schematically, the hidden, unobservable mechanisms of the economy.

The key once again is the notion of a model. The model may postulate various kinds of processes, events or entities which are unobservable in principle. These may be demanded by the requirements of autonomy and thus include metaphysical reduction, or by scientific reduction, or by the theory-ladenness of description. Irrespective of which requirement is operational, the literal construal of the model entails that such postulates are, in the jargon of the logician, propositions, i.e. sentences which are true or false. In other words, the constructive empiricist will not go down the road of instrumentalism which argues that these postulates are merely heuristic conceptual tools and are not propositions at all. Ontologically, however, the constructive empiricist stops short of the realist construal of such postulates. If these postulates appear to refer to entities which are unobservable in principle, the constructive empiricist asks Hume’s question, i.e., if there is unobservable in principle and if one proceeds to give a purely theoretical characterization of x, how can we know that this characterization is correct?

Theoretical, open-ended language is indispensable to the program of scientific reduction. This language forms part of our theory-laden descriptions of the world, descriptions furnished by empirically adequate models. However, if these extend to entities which are unobservable in principle, though they are integral, in the sense of being indispensable to our theory-laden descriptions, they are not ontological in the sense of reflecting mechanisms, which are unobservable in principle. The model, of course, may postulate mechanisms or entities which are currently unobservable but which are in principle observable. In this fashion, economic models can reveal hidden mechanisms of the economy. Such mechanisms are not precluded by Hume’s question and certainly are not precluded by constructive empiricism. Scientifically reduced models can help to reveal hidden mechanisms, provided these are in principle observable. In short, the constructive empiricist reinterprets the ontological ramifications of either scientifically reduced or metaphysically reduced programs in terms of theory-laden descriptions and their empirical adequacy and not in terms of strata of reality. Ontological commitment in any scientifically reduced program is limited to what is in principle observable.

Thus Woo’s concern with the ontological ramifications of metaphysical reduction and especially his concern with the ontology of scientific reduction, is reinterpreted as a concern for the empirical adequacy of theory-laden descriptions. It is not a question of economic theory revealing the hidden, generative, unobservable mechanisms of the economy. Rather it is a question of economic theory furnishing models which in turn furnish empirically adequate descriptions of economic systems, processes and events.

The consequences of this reinterpretation of
scientific reduction and its ontology are manifold. We shall focus on two which are raised by Woo. The first is that the relative autonomy of economics vis-a-vis other disciplines, such as psychology or sociology, does not result in a dogmatic refusal to interface in some fashion or other with the latter. On the contrary Woo's conclusion that some interfacing between economics and neighborhood disciplines is required seems correct. Since economic structures are concretely embedded in a broader web of social structures, its relative autonomy as a science requires that one should scientifically investigate the manner in which other social structures impinge on economic ones.

This brings us to the second and, in our opinion, more significant consequence, namely, in so far as orthodox economics fails to accommodate such an investigation, it is *empirically inadequate*. More generally, when economics is located in the scientifically reduced end of the spectrum, one of the central questions which can be raised is whether or not it is empirically adequate, i.e. whether or not it furnishes accurate, theory-laden descriptions of all the observable economic events and processes. In view of Woo's critique of orthodox theory, the constructive empiricist puts his cards clearly on the table and explicitly concludes that orthodox theory is empirically inadequate: it fails to supply a scientifically reduced model which is adequate to the known multiplicity of events characterized in the domain of the economic. "The deplorable state of present day economic science" (Woo, 1990, p. 66) consists in the fact that it is empirically inadequate. In this fashion constructive empiricism provides a rich reservoir of methodological tools which, in general, is very pertinent to the rational appraisal of economic theory and, in particular, complements and sharpens Woo's negative evaluation of orthodox economics.

References