Uskali Mäki, Helsinki

Explanation as Redescription

1. Introduction

It seems to me that much (not all) of modern scientific realism subscribes to the view that scientific explanation is (or at least has as its constituent) redescription of explananda. This means, among other things, that explanation is not exhausted by logical derivation of explanandum sentences. This is a clear difference with respect to the positivist covering law model of scientific explanation. On the other hand, the scientific realist view seems to indicate a convergence towards some non-positivist conceptions among which I will give Marxism some attention in what follows.

This paper is a case study – concentrating on the notion of explanation – of scientific realism as a contemporary stream in philosophy. Such case studies are important and necessary when trying to form general assessments as to the nature of scientific realism and its different versions, and their relations to other philosophical currents. My short comments on Marxism are motivated by the conviction that there are interesting affinities and parallels – and contrasts too, to be sure – between Marxism and scientific realism. (See Mäki 1984.)

The paper is divided into three parts. First, the general idea of explanation as redescripton is introduced. Second, the sources of the unifying power of theoretical explanations are explored. And third, the problem of the existence of explanada is discussed. As will be evident, many essential questions are left unanswered.

2. Description and redescription

It is a typical scientific realist view that scientific explanation is not a matter of successful inference but of successful reference. To explain a thing or phenomenon is to refer to its essence or inherent nature. Explaining something entails saying what it is – what it really is. Saying what it really is explains why it has certain manifest properties and behavioural traits. This is accomplished by a true scientific theory, which provides a description of the thing's real nature. This description is actually a *re*description, because the thing has already been given a description (often a "phenomenological" one) as something in need of explanation. Thus, explanation involves introducing new concepts as vehicles of theoretical redescriptions. And, in the usual realist way, these new concepts have a referential status.

This idea of a movement from phenomenological description to theoretical redescriptions as essential to scientific explanation has been formulated by scientific realists with varying emphases. Wilfrid Sellars has provided some important insights. (See Sellars 1963, 1967.) Explanation to him is a matter of conceptual change, of a replacement of conceptual frameworks. Each of these frameworks gives a de-

scription of a thing, but only the replacing framework has, in the limit, the power to tell us what is really the case, thus explaining the phenomena described by the replaced framework. Objects of these two frameworks are identified by the so-called substantive correspondence rules, which say, in effect, that the objects of the replaced framework do not exist at all — only those of the replacing framework exist. This is a peculiar feature of the Sellarsian theory to which I will return.

The Sellarsian view of explanation can be clarified by distinguishing between internal and external explanation. (Pitt 1981.) We give an *internal explanation* when we describe and systematize the behaviour of some entities within a framework: those entities are identified and the regularities of their behaviour generalised by means of the conceptual resources of one and the same framework. The positivist covering law model of explaining phenomena is an example of internal explanation: singular phenomena are explained by deducing their descriptions from empirical generalizations. We give an *external explanation* when we define those entities and phenomena in terms of another framework purporting to tell what those entities and phenomena are — and thus explain why they behave the way they do as described in the first framework. This is the scientific realist mode of explanation: theories explain phenomena directly and thus also the approximate accuracy of the regularities of their observed behaviour.

Jerrold Aronson emphasises the ontological properties of explanatory theories. Aronson thinks that "a theory's ability to explain can be traced to what it says about the nature of things, how things work, i.e. the major explanatory work of a theory is carried out by its 'catologue' of objects, their properties and the kind of causal interactions that take place among them" (Aronson 1984, p. 164). It is the task of a scientific theory to identify phenomena which on the surface of things seem independent with aspects of an underlying common ontology and thus to eliminate their apparent independence. This is why, in Aronson's view, theories explain by "reducing the number of independent phenomena". And this is accomplished by redescribing those phenomena as aspects or appearences of underlying theoretical entities.

There can be no doubt that something like the accounts of the concept of explanation outlined above can be found in much of the Marxist thinking about the aims of science and explanation. Apparently little is said about 'explanation' in Marxist literature, but I think that precisely the idea of explanation as redescription with deepening ontological commitments is implied, for example, in Marx's own famous statements about the aim of science in terms of 'Begreifen', understanding or thinking by means of concepts.

Let me take just one example, E.V. Ilyenkov's study of the dialectics of the abstract and the concrete in Marx's *Das Kapital* (Ilyenkov 1982). Ilyenkov talks about "empirical familiarisation with phenomena" (ibid., p. 169), which amounts to the same thing as an abstracted description of their observable features. This makes it possible to distinguish between one type of phenomenon — e.g., profit — and others, to "recognise" them as different. "This is quite successfully done by every entrepreneur, who can very well distinguish between profit and wages, money, and so on. In doing so, the entrepreneur does not *understand*, however, *what profit is*." (Ibid., p. 176.) It is the task of science to provide this understanding or "comprehension" by means of "concepts". Ilyenkov has a specific notion of "concept", and the way he applies this term is already ontologically loaded. A concept in his sense refers to a "concretely universal", a reality which constitutes a common ontological basis for phenomena. (Ibid., p. 79.) Now it is obvious that concepts in this sense explain phenomena by referring to their common ontological basis, and by so doing they redescribe them as moments or aspects of this basis.

After these preliminary remarks I am going to discuss two specific topics: first, the idea of theoretical explanation as creating unity in the apparent diversity of phenomena, and second, the problem of the existence of the objects redescribed.

3. *Diversity and unity*

I shall now show that both scientific realism — here represented by Aronson — and Marxism — represented by Marx and Ilyenkov — share the view that scientific explanation amounts to finding out an internal unity among apparently diverse phenomena.

According to Aronson, the need for explanation arises when we have a set of phenomena, which, on the surface of things, or under a common sense description, have nothing to do with each other. The phenomena under this description appear as diverse, independent, contingent. The first step in explaining these phenomena is to find an ontology which is common to the phenomena. Then the phenomena are given a new description, they are redescribed as aspects or appearances of the common ontology. This creates an internal unity among the phenomena. Under the redescription there is no longer diversity. In this sense theories explain "by reducing the number of independent phenomena".

The role of the operation of *identification* is central here. The seemingly separate phenomena are identified with different aspects or appearances of the same set or system of objects or processes "in the same way that a set of six squares may be identified with six surfaces of a cube" (Aronson, p. 175). We have here two definite descriptions, one of which makes the phenomena look diverse, the other (the redescription) makes them look unified. These two descriptions are connected by the relation of identity, and the redescription takes on the form: 'aspect of__', 'manifestation of__', 'appearance of__', etc. These expressions need completion by reference to a theoretical entity or process. (Ibid., p. 176.)

It seems to me that implied in Aronson's theory of explanation is a nice feature of what might be called dialectics. There are two descriptions. Under one of them the phenomena look diverse, under the other they look internally united. The objects of the two descriptions are proposed as identical in the explanation. So we have here a case of *unity in diversity*, an identity of unity and diversity.

Now this is of interest when we recall the classical Marxian concept of 'the concre-

te'. Both Marx and Ilyenkov define the concrete precisely as unity in diversity (e.g., Ilyenkow 1982, pp. 32-33). And when we also recall that in Marx's opinion the task of science is "to reproduce the concrete in thought", there is no doubt that there is an agreement here, too, between Marx and Aronson, given that explanation is the aim of science according to Aronson. In Ilyenkov's terms, explanation in Aronson's sense is "thinking in concepts", which is "directed at revealing the real unity of things, their concrete connection of interaction..." (ibid., p. 38).

It is illuminating to take a brief look at Ilyenkov's account of the notion of 'common' (ibid., p. 92-93). He says that it does not mean the same as 'identical' or 'the same': what some set of different objects may have in common is not the identical features they all possess, rather, the meaning of the notion can be found in the contexts where one speaks of, e.g., a 'common field' and a 'common ancestor'. Here what is common has the role of a bond between objects sharing a field or an ancestor. It is clear that this is exactly the meaning of 'common' which we can find in Aronson's idea of a common ontology.

What more can be said about the relationship between the aspects of a common ontology? Aronson has nothing to say about this. Ilyenkov, however, thinks that it is a dialectical relation: that of "opposition", "complementarity" and "interaction". While Aronson sees only dependence between phenomena — mediated by the common ontology —, Ilyenkov sees interaction of mutually exclusive and presupposing opposites (Ilyenkov, p. 88-92). As a result of an explanation Aronson has unity of diverse aspects, while concepts in Ilyenkov's sense bring about unity of opposites. This is an additional specification to Aronson's theory of explanation — a specification of the nature of the underlying metaphysics. (When assessing the nature and importance of this difference it is good to remember that Ilyenkov's book is an analysis of a specific scientific theory, while Aronson is writing a general philosophy of science.)

4. Explanation and existence

Now I will go to the second specific issue, the question whether the objects which are being redescribed in the explanation really exist when described as part of the explanandum. Recall that the point of theoretical redescription is to say what is really the case, what the objects under consideration are. This makes it evident that the objects as redescribed do exist. But what about their existence under the description before explanatory redescription?

Sellars gives a negative answer to this question. The key to this answer and to his whole view of explanation as redescription is the notion of substantive correspondence rules. An example of such a rule is a statement which "in some sense *identifies* temperature of a gas with the mean kinetic energy of its molecular constituents" (Sellars 1967, p. 330). These statements have such a peculiar role that while they identify observational entities with some theoretical entities, the same time they deny the existence of the former. "According to the view I am proposing correspondence rules would appear in the material mode as statements to the effect that the objects of the observational framework *do not really exist — there are no such things.*" (Sellars 1963, p. 126.)

So there are no gases in the world, only their molecular constituents; no tables, only electrons. This kind of an ontological doctrine is part of Sellar's view of explanation. To explain x is to show that x does not exist by correlating it with y — an object of the explanatory framework — which is claimed to exist: x really is y. So the claim that something does not exist is an explanation of that something. (Compare this to the positivist covering law view of explanation where the reality of the explanandum is taken for granted.)

There are many problems involved in Sellars' view, but unfortunately space does not permit me to go into them (See Pitt 1981). Instead, I want to propose an interpretation of one implication of this view. Explanation for Sellars is a case of conceptual change, of replacement of conceptual frameworks. Every framework postulates candidates for the status of reality, but once a framework is replaced its candidates are rejected in favour of those of the replacing framework. So the progress of science is a process of elimination of candidates for reality until we reach, in the limit, the final framework, which needs no more explanation and thus cannot be replaced. This is how Sellars might be seen to provide common sense and all contemporary science with a sort of "negative ontology": at least the objects denoted by replaced frameworks are not real. And before the hypothetical time when we have the final framework, there is reason to expect our present frameworks will be replaced. This is why a "positive ontology" can only be attached to the final framework: only its objects exist in reality.

Aronson does not share Sellars' eliminative scientific realism. In Aronson's view, the relation of identity between the objects as described and as redescribed guarantees real existence to both of them: "if temperature is the same as mean kinetic energy, then temperature is just as real as mean kinetic energy" (Aronson, p. 234). This entails a more moderate version of scientific realism.

It seems to me that Marx, in his critique of political economy, sides with Aronson rather than with Sellars on this issue. It is obvious that the postulated explanatory theoretical entities of *Das Kapital* — such as value, abstract labour, capital in general etc. — are taken by Marx as real. So he is a scientific realist in this sense. But he does not want to eliminate the explained appearances — prices, profits, market transactions of goods etc. — from the realm of existing things. It is true that in his theory of commodity fetishism Marx says that the real relations between people in production appear in forms — namely, as exchange relations between things — which hide their real nature. But, at the same time, Marx says that they appear as what they are. Thus, according to Marx, on the surface of things, we have price relations between things, and in the essence we have value relations between people. In our previous terminology we can say that under the phenomenological description the market relations are price relations between things and under the theoretical redescription they are

appearances of value relations between people. Object of these two descriptions are proposed as identical, and both of the poles of the identity relation exist. This might be a possible way of interpreting one aspect of Marx's social ontology, one which makes Marx only a moderate scientific realist.

References

Aronson Jerrold: *A realist theory of science.* London 1984.
Ilyenkov E. V.: *The dialectics of the abstract and the concrete in Marx's Capital.* Moscow 1982.
Mäki Uskali: "Wissenschaftlicher Realismus – Kontroversen und Konvergenzen", in *Realismus und Dialektik, Dialektik* 8. Köln 1984.
Pitt Joseph: *Pictures, images and conceptual change.* Dordrecht 1981.
Sellars Wilfrid: *Science, perception and reality.* London 1963.
Sellars Wilfrid: *Philosophical perspectives.* Springfield 1967.