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Full Length Research Paper

A Philosophical Study of D'Andrede's Three Scientific World views And The Covering Law Model

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This study looks at C.G. Hempel and Mill postulation that the covering law model is adequate for the study of history and all sciences. However D'Andrede refuted that explanation in history and social sciences (natural sciences as D. Andrede calls it) require universal generalization. The paper examines D'Andrede's argument that the covering law model is inadequate for the study of explanations in social sciences and history. After examining the arguments, the paper supports D' Andrede's position that explanations in history and social sciences do not require universal generalizations in form of the covering law model. The paper argues in support of D'Andrede's position because the covering law model cannot adequately account for human intentions behind human actions. The semiotic science is a new "discipline" ,an emerging discipline and concept used in various disciplines with different meanings. Thus, explanations in semiotic science for instance cannot be studied via the covering law model.

Keywords: D'Andrede's Three Scientific World views, Covering Law Model, Mechanistic model, Semiotic Science.

INTRODUCTION

A thesis about scientific explanation that has been very influential in recent thought is the deductive nomological model or the covering law model of explanation. Covering-law model or deductive-nomological theory is a Model of explanation which explain an event by reference to another event necessarily presupposes an appeal to laws or general propositions correlating events of the type to be explained (explananda) with events of the type cited as its causes or conditions (explanantia). It is rooted in David Hume's doctrine that, when two events are said to be causally related, all that is meant is that they instantiate certain regularities of succession that have been repeatedly observed to hold between such events in the past. This doctrine was given more rigorous expression by the logical positivist Carl Hempel (1905–1997). The covering-law model includes two sorts of explanation, Deductive-Nomological or D-N explanation, and Inductive-Statistical or I-S explanation.

D'Andrede, in his paper "Three Scientific world views and the Covering Law Model" D' (1986) examines the adequacy of this model of Science and its applicability to social science (natural science as he calls it) and the Semiotic sciences. D'Andrede argues that the pursuit of general laws is only characteristic of physical sciences. The model, he concludes, cannot be applied productively in researches in the natural and semiotic sciences. It is regards to view that this paper examines this claim of D'Andrede and shows that D'Andredes claim seems true in view of the fact that the subject matter of the physical sciences differ from those of the social or natural sciences and semiotic sciences. Mechanistic model, the paper observes is much suitable for the study of natural and semiotic sciences.

The Sciences and the Covering Law Model

In his paper "Three Scientific worldviews And the Covering Law Model''(1986), D'Andrede examines the Descriptive adequacy of the covering law model of science especially with regard to the social Sciences and psychology. The Covering Law Model of explanation is characteristic primarily of the physical sciences but inadequate as an explanation model for the natural

sciences such as oceanography, biology and so on. This is not all; it is completely inadequate as an explanatory model for the semiotic sciences because there is considerable difference between the physical science approach and the semiotic science approach.

For D'Andrede there are three Scientific worldviews, the worldview of the physical sciences, natural sciences and semoistic sciences. Not all the three of them are characterized by the search for general laws. The pursuit of general laws is characteristic primarily of the physical sciences according to D'Andrede. That is, the covering law model can only be used to study physical phenomenon of the physical sciences such as physics, not human ehavior of the semiotic sciences.

The debate whether the covering law model can be used as an explanatory model has a long history. J. S. Mill following Hume and the Philosophers of the French enlightenment maintains that a science of human nature is possible (1874). For Mill, thoughts and feelings of humans are the causes of their actions. On this basis, Mill argues that the canon of inference (Mill's method) that is used to discover and justify causal regularities in the physical world can be used or employed to investigate the causal connections between thoughts and actions of man. For Mill, explanation of human ehavior is not significantly different from explanation in the physical sciences. Since subsumption under causal generalization is at the heart of explanation, he recommends his version of what latter come to be called a covering law model of explanation (Braithwaite1953).

C.G. Hempel's work on explanation in the social sciences lies squarely in the tradition of Mill, because he holds that explanations in history and other social sciences require relevant universal or statistical generalizations. Both Mill and Hempel have a shared belief that explanations of human ehavior are fundamentally similar to explanations of physical phenomenon. For both of them, the covering law model is adequate for the study of explanation in all the sciences. D'Andrede agrees with Mill and Hampel that the Covering law model is adequate for the study of the physical Sciences but disagree that it is appropriate for explanation in the natural(social) sciences and semiotic Sciences. For D'Andrede, Science of human ehavior is not possible, contrary to Mill's advice that Scientists should investigate human ehavior with the aim of uncovering general laws. D'Andrede could be said to be an opponent and critic of Mill and Hempel, because he rejects their shared belief that explanatiosn of human ehavior is fundamentally similar to explanations of physical phenomenon. For D'Andrede, the regularities and patterns found in the natural and semiotic sciences are not timeless and Universal. Explanations produced by natural science such as biology, Oceanology do not rely on general or universal laws or the covering law model of explanation accordimg to D'Andrede(1986;30).

At this juncture, one may ask, what is the Covering Law Model? The Covering law model of explanation also known as the deductive nomological model of explanation (or D - N) is a model of Scientific explanation which holds that explanation is achieved and only achieved by subsuming what to be explained under a general law. It is known as the covering law model because it makes use of the notion of bringing a case under a law that is covering it with a law.[5]

It holds that a genuine scientific explanation must have three components. First, it must incorporate one or more general laws, two, there must be some statement describing whatever is being explained. Third, the thing to be explained must follow from the general principles or law given that the particular facts also hold .To explain events, according to this models, is to seek laws under which to subsume It(Dray W.;1960)

According to D'Andrede, the main outline of the covering law model is as follows; One, Science is a search for "general laws" to explain events. Two, general laws make universal generalization such as water boils at 100^{c}. Three, the function of general laws is to connect events in patterns-explanation and prediction (D'Andrede1986;90).

D'Andrede's Examination of the Adequacy of the Covering Law Model

To examine the adequacy of the covering law model, D'Andrede stats by explaining that the sciences do not have the same worldview. According to D'Andrede, the worldview of the sciences may be divided into three. One, the physical sciences that is, the natural sciences which is concerned with stating laws of behavior.It is a science worldview in which there is a complete homogeneous universe ''where all generalizations apply equally through all time" (D'Andrede1986;20). These sciences include, physics, chemistry, and astronomy and related engineering fields. Second, the natural sciences, which deal with what things are made of and how they work. They include biology, geology oceanography, some aspects of meteorology, much of economics, psychology, some fields of anthropology and sociology according to D'Andrede. The third group is the semiotic science, which studies a system of imposed meaning. They include linguistics and some fields of psychology, anthropology and sociology.

According to D'Andrede, Explanations in physical sciences rely on universal laws because there are few basic objects, few forces and their interrelationship can be stated in quantitative mathematical form. There are

minimal restrictions on boundary conditions unlike the natural or semiotic sciences. So the pursuit of law is characteristic of the physical sciences. This is not the case with the natural sciences such as biology because its worldview is not homogenous even though they claim to work in the same environment and do laboratory experiment.

For D'Andrede, explanations in the natural (social) sciences do not rely on universal law but on mechanisms. The regulations and patterns found in the natural sciences unlike physical sciences are not timeless and universal. Explanations in these sciences are contingent and contextual in the sense that they are dependent on certain historical and environmental factors. Unlike the physical sciences, if the conditions change, the patterns of regularities or patterns may disappear or change altogether. Natural science does not uncover universal laws but mechanisms. The biologists description of DNA is "...not the description of a law but rather the description of a complex contigent mechanism" (D'Andrede1986;21).

Though he did not define the term mechanism in his paper( ),but mechanism may be defined as ''frequently occurring and easily recognizable casual patterns that are triggered under unknown condition or with indeterminate consequences''(Elster J.1999;1). D'Andrede denies that natural science has uncover or can uncover any genuine law – like regularities. What social scientist can and have identified are numerous mechanisms which produce explanations that go beyond mere descriptions not laws. Their generations are not law – like.

However, if any generation is a general law, the natural sciences could be said to conform to the covering law model of science but generalizations are not general laws by definition(D'Andrede1986;22).. Law means something more specific than generalizations.

A law, according to the Standard English, means a very general proposition about the quantitative relations between a small numbers of elements (D'Andrede1986;22).. D'Andrede concludes that in this sense, "the covering law models is inaccurate when it states that all sciences consists of a search for real "general laws (D'Andrede1986;22).

It may be argued that natural sciences often view the objects of their reseach or inquiry as machines just as the physical sciences view theirs too. However, the machines of the natural sciences include social institutions and structures such as markets, beaurecracies and so on. Offering a mechanistic account of the inner workings of these so called machines provides an explanation that provides a degree of generalizable knowledge.

For this reason, D'Andrede argues that generalizations in natural science are different. In the natural sciences, "Generalizations about how things work are often complex true only of one particular kind of things and usually best stated in a simplified natural language. (D'Andrede1986; 21) However Mechanistic explanations are a kind of constitutive explanation, in which the behaviour of a whole is explained in terms of the operation and interaction of the mechanism's parts (Craver2006;355-376). This is unlike a covering law model in which the explanations must first, describe the causes, (statements Of initial conditions), second, the explanans must cite a law of nature, third, all of the explanation's propositions must be true and fourth, by so doing, explains the explanandum(by entailing it or conferring probability on it).

The inadequacy of the covering law model is very glaring in the semiotic sciences. The semiotic science as explained earlier consists of field that study "imposed" order rather than physical order. Human beings create this phenomenon and make the laws governing them. For instance, traffic regulations differs from one country to the order. This is unlike, physical phenomenon. The laws of physics are there to be discovered. The imposed order of the semiotic science is an arbitrary order, which can change rapidly and varies from place to place and time to time.

Though the generalization of natural social science sometimes sound like laws it does not have the exactitude of scientific laws because it is contingent on a variety of unstated factors. Explanations in the semiotic – social science sound like interpretation contingent on time, place and person. They are also too local, subjective and hard to falsify and so it is argued that they are not really science. The same charge has been laid against the natural social science. All said, the main problem seem to lie in the covering law model of the Use of the word law. But generalizations as shown earlier or above are not law.

It should be noted that Hempel and others fail to recognize that different fields of science have different cannons of generalization and mistakenly took an ideal form, general law as the prototype of a generalization(D'Andrede1986;26). This is why the slowly improving generalization of social science and psychology look so far from the covering law model.

Another problem is Hempel's misconception of the role of science. For Hempel, science explains events. For D'Andrede, though Science can explain particular events but this is not the main aim of science or what science does. For D'Andrede, what science tries to understand are not isolated events but regular phenomenon. The description of a regular phenomenon is a generalization. This is to correct the erroneous notion held by some social science and psychology that they must be able to predict particular actions of particular person in order to be science – because this is what science does

according to them. For, D'Andrede, what science seeks is to explain a regular phenomenon not to explain why the earth has one sun or why a particular ship will capsize.

However, psychology can be said to have a scientific approach in the sense that it sees the mind or psyche as a machine like thing. The problem is that it is not easy to distinguish what is learnt from the machine just as it is not easy to distinguish hardware from the software of a computer according to D'Andrede. Most of the findings in the fields of social psychology and personality are not the results of psychological laws but cultural uniformities.

For D'Andrede, there are interior and exterior views of action, so we cannot rely on the exterior view of actions alone. Moreso, that the two views may lead to different conclusions. This raises the question of how to determine meaning. Unlike science which have the level of behaviour to contend with, social science has two levels, the exterior and interior; If may be argued that fundamental causes of human behaviour are probably mental rather than physical and that human action can be explained by reference to mental causes such as motives beliefs desires and reason. But human action too can be explained via exterior view of action.

For D'Andrede even the experimental method of psychology does not fair better. This is because it is not a laboratory method and its practitioners are concerned with issues of control than is standard in laboratory experimentation. Though tests are conducted as in standard laboratory experiment, these tests are nothing but direct and indirect queries. So, it has been criticized as nothing more than interview method.

The problem of the field of social psychology seem worse according to D'Andrede because it lacks focus, it has changed its subject matter. Even if it is now concerned with the study of processes, processes cannot be easily observed in natural settings and effectively done by psychometric techniques. D'Andrede concludes that social science and psychology are concerned with the study of meaning that is a different worldview and subject to explanations via mechanisms rather than universal laws.

Arguments in Support of D'andrede's View

It may be argued that what is done in science is the day-to-day practice of social scientist. They employ complex computing machines assorted equipment, cardpunches, tape recorders; teams of research, workers are assembled to work the machineries and help evaluate the results; observation rooms are being utilized for experiments with small groups. In fact, one can conclude that scientific activity of the social scientists seems glaring. One may be convinced that what we are looking for is a natural science of human behaviour.

However, the first objection, one might raise to this is about the success of this science. One of the reasons for the poor success of the social science is that they are theoretically weak. Their enthusiasm for statistical techniques is a revelation of their theoretical underdevelopment according to Chomsky (1968) According to him, the behavioural sciences only contrived to mimic the surface features of the physical sciences. According to him, they can detect the regularities of outward behaviour but cannot account for its interior logic and organization.

Thus, in the opinion of this paper, the actual practice of the social scientists does nothing to refute the claim that its explanations are not like that of the physical sciences and that the covering law model is inadequate to study it. So it is not really science. This view is plausibly developed by Peter Winch in the idea of a social science, According to Winch, social scientists are prone to misunderstand their own practice; they think but mistakenly that the kinds of explanation they are concerned to give are exactly like those which the natural scientists are concerned to give (1958). Their apparatus techniques, environment are useful but not for the reasons they suppose. Winch's argument is that social behaviour must be understood as rule – following behaviour and not as casually regular behaviour

There is a big difference between studying the behaviour of human beings and in animate objects. Apart from the outward actions that can be observed in both kinds of behaviour, there are motives, beliefs, desire and reasons behind human actions. So, human behaviour unlike the behaviour of inanimate things are meaningful. So with regard to human action and behaviour, there are two levels of meanings, the exterior and interior. The exterior and interior meanings may be the same at times; they may be sharply different from one another at times. There is also the problem of how to know which is the correct one. Thus, human action or phenomenon cannot be accounted for by the exterior behaviour alone that the covering law model may want to use as causal factor.

However, when the exterior and interior meanings are the same, the covering law may seem adequate. In most cases the exterior and interior meanings of human actions are not the same which also accounts for why human actions are not easily predictable as the behavior of inanimate objects. There are interior factors or meanings that the covering law cannot penetrate. It is the interactions of the exterior and interior factors or behaviour that can account for human action or phenomenon. And this can best be done by a mechanistic model of explanations that can account or

study both external and internal meanings of human action and institutions.

It is important to note that the subject matter, scope and nature of semiotic science are unlike other sciences, yet to be determined. This is why semioticians have variously define their fields as a ‘‘science’’ ‘‘mode of thinking’’ and /or an ‘interdisciplinary approach or method’’(Abraham S.2008). This is unconnected with the fact that it developed independently in various other unrelated disciplines. Signs are pervasive and prevalent in almost all gamut’s of human endeavour – from medicine to theology, from geology to agriculture, from philosophy to communication. This is why some semioticians who are even skeptical about their discipline declares that ‘semiotics is whatever any scientist dealing with it calls semiotics’(Abraham S.2008). . This kind of discipline cannot be said to have regularities in form of generalizations that can be subsume under a general law Thus, one can join D’Andrede in concluding that the covering law model is inadequate to study the natural sciences and especially the semiotic sciences.

CONCLUSION

This paper has examined D’Andredes claim that the covering law model of explanation is inadequate for research in the natural – social sciences and semiotic sciences. The author of this paper agrees with D’Andrede that human behaviour cannot be subsumed under general law because of its boundary conditions and the fact that human behaviour is not as simple to understand as the behavior of physical phenomenon. In view of the fact, that the social sciences and semiotic sciences have two levels of meanings to uncover and the fact that human action and social phenomenon can only best be explained by going beyond human physical behaviour, to the mental, that is, intentions, desires beliefs and so on, this paper subscribes to the D’Andrede’s view that the mechanistic model of explanation is the most appropriate for research in social science and semiotic sciences.

The paper argues in support of D’Andrede’s position because the covering law model cannot adequately account for human intentions behind human actions. Furthermore, the paper also argues in support of D’Andrede’s position because semiotic science is a new “discipline” ,an emerging discipline and concept used in various disciplines with different meanings. Thus, explanations in semiotic science for instance cannot be studied via the covering law model.

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