What is theory?

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Abstract

Purpose – The aim of the paper is to examine the meaning and value of the notion of theory as a basis for other papers in the special issue which examine facets of theorising HRD.

Design/methodology/approach – A small scale and targeted literature review was conducted which focused on writings in the philosophy and sociology of science in order to review the current status of knowledge and debate on the concept.

Findings – The literature review revealed problems with the traditional but still conventional understanding of the concept. These are best illustrated by critiques of “scienticism” which apply in both the natural and social sciences. There are clear and significant problems with simplistic formulations of “theory” as a concept which limit the potential value of applying the term in academic enquiry and which also limit what might be thought possible for theorising HRD.

Research limitations/implications – A number of implications for theorising and so researching HRD are identified. These include a need to locate such theorising in declared and clearly articulated as opposed to assumed positions and to be aware of the paradigmatic principles informing both research and theorising in HRD.

Originality/value – The article has value primarily in relation to setting the scene for the other papers in the special edition and in delineating the aspirations and possibilities of future HRD theorising and research. It suggests a need for working towards achievable outcomes within a context of rejecting the grand ambitions and aspirations of scienticism. While not directly addressed in this article the other papers make clear that such aspirations and ambitions have been characteristic of previous and current HRD theorising.

Keywords Knowledge management, Human resource development

Paper type Research paper

Introduction

The purpose of this article is to set the scene for this special edition by briefly examining the origins and meaning of the concept of “theory”. We cannot explore with any clarity theorising in any subject or domain without determining some limits and boundaries. So, while we will not set out here to specify or prescribe what the precise limits and boundaries might be for the concept of theory we will attempt to describe it and to point to the possibilities and limitations of what the concept will allow us to do in relation to theorising human resource development (HRD). However, we are here not concerned with the specific development of HRD theory, or indeed any specific or particular theory at all. Other contributions in this special issue deal with the former, especially Hamlin and Stewart. Our concern is simply to establish the nature and value of the concept of theory. We have to include some complex if fundamental ideas from the philosophy and sociology of science in this task and so may at times seem to be straying far from HRD matters. But, we do always try to return to our context and the purpose of the special edition through attempts to relate and apply our discussion to theorising per se and so theorising HRD.
Meanings and origins

A useful starting point in establishing meaning is a dictionary and the OED is as good as any. The definition there states a theory is “a supposition or a system of ideas intended to explain something”. Three words are of particular interest here. First, the definition is clear that a theory is an explanation; theories offer or provide accounts of how and why things are as they are. Second, they “intend” to explain. This implies that they may not which is a useful caveat. Third, “something” implies phenomena separate to and independent of the theory. As the OED definition goes on to state, “especially one based on general principles independent of the thing to be explained”. This suggests that a theory explains not just a, or the, particular instance of something but all and any instances. So, implicit in this part of the definition is a proposition that a theory, if it is valid and is to have value, provides an explanation with general and perhaps universal application. This clearly associates the notion of theory with “scientism” (Warburton, 2004) and so with scientific principles and practices. It is also instructive to be aware of what is not a theory. According to Sutton and Staw (1995) theory is not references, data, lists of variables, diagrams, or predictions. Most of these may be used in theory building or the result of theory building but they do not constitute theory. Neither do predictions; a theory may allow or support prediction but the prediction is not the theory.

The OED definition goes on to give an example of a phrase using the word which is “in theory”. This is described as referring to an ideal or hypothetical situation. This perhaps reinforces the use of the word “intended” and the possibility of the explanation being inaccurate or incorrect. It is also indicative of the distinction drawn in the philosophy of science between “idealism” and “realism” which we discuss later in the article. Using the OED thesaurus adds further weight to the view that a theory is, or can be, tentative and an intention to explain rather than an actual explanation. Some of the synonyms offered by the thesaurus include “hypothesis”, “thesis”, “proposition”, “premise” and “contention”. All of these words reinforce the tentative and perhaps speculative (another synonym offered by the thesaurus) nature of theory. These characteristics may be best captured by the word “corrigible”. The negative form of this word is “incorrigible” and that may be more familiar to us as it may have been applied to us as children by parents or school teachers. The latter form means “incapable of correction”. Corrigible thus means capable of correction. Therefore a theory is an intended explanation that is capable of being corrected and so inherently capable of being wrong.

The synonyms in the previous paragraph will be familiar to academics. They are the language of our trade. The reason for this is that the concept of theory, as the OED etymology suggests, is associated with what is referred to as the “scientific revolution”. This was the mainly European movement in thought and philosophy that occurred in the sixteenth and primarily seventeenth centuries, although there is debate and dispute about exact dates (Henry, 2002). What this movement established is claimed to be the foundations of what is now referred to as “modern science”. Among those foundations is development of the “scientific method” as a (then) new approach to answering questions about nature and the natural world. Formulation and testing by experiment and other means of hypotheses (theories) is central to the scientific method. So too is observation, quantification and measurement as a basis for developing theories; accounts “intended to explain” (Henry, 2002).
In summary then the concept of theory is inextricably connected to notions of science that, in origin at least, refers to investigating the world according to a set of rules and principles. In very simple terms, a theory attempts to explain phenomena based on systematic observation in a way that can be tested and corrected. But, that is too simple. A more detailed review of the origins of such a view will illustrate why the situation is more complex.

**Logical positivism**

The description above is what might be described as a standard or conventional account of the concept of theory. The historical and philosophical study of science suggests some problems with such accounts. According to Okasha (2002) the nature of theory as just described is associated with logical positivism, a philosophical approach developed and highly influential in the nineteenth and twentieth centuries. This approach rejected the need or value of studying the history of science on the grounds that what matters in science is the “context of justification” rather than the “context of discovery”. The latter refers to the circumstances in which science arrives at a particular theory. The former refers to the circumstances in which the theory is tested and verified, or not. For logical positivists the context of discovery could be, was and is highly variable and uncontrolled, and so full of potential subjectivity. In contrast, the context of justification is subject to the same and precise set of procedures which produce objective assessments of the truth and validity of theoretical claims, or not. Therefore it does not really matter how theories are arrived at, what does matter is how theories are tested.

**Proof versus falsification**

Logical positivism also emphasised the distinction between theories and observable facts. This distinction supports the claim that theories are independent of the phenomena they seek or intend to explain, and vice versa. Observable facts are what theories intend to explain and are also the means by which theories are tested and verified. Verification is an additional characteristic of logical positivism (Benton and Craib, 2001). Up until the influential work of Karl Popper (2002) the main focus of verification was proof, or proving the claims of a theory. Popper focused attention on falsifying rather than proving claims to truth. This move to falsification was an attempt to deal with two related philosophical problems. The first was the necessary use of inductive reasoning in science. This need arises from the inability to observe all instances of a phenomenon under investigation. Popper famously used the proposition “all swans are white” to illustrate this problem; the only logical way that proposition can be proved is to directly observe each and every swan in existence to check and confirm that each is in fact white. Any reasoning process which involves extrapolating from some instances to all instances is inductive rather than deductive and so Popper accepted that science could proceed only through the use of induction. The second problem arises from this and that is the claim expressed among others by the Scottish enlightenment philosopher, David Hume (Benton and Craib, 2001; Okasha, 2002). Hume pointed out that all inductive reasoning rested on an assumption of what he termed the uniformity of nature. This simply means that we assume all unexamined or unobserved instances will conform to the instances we have examined or observed. To use Popper’s example, all of the swans we have examined or observed are white.
therefore we infer that all other swans will be white. But, as Hume pointed out and Popper accepted, the inference is irrational; there is no rational basis. And the same is true of the belief in the assumption of the uniformity of nature; that too is irrational in the sense that there is no rational basis for believing it is true. To overcome these two problems Popper argued that science should proceed on the basis of seeking to falsify rather than to prove claims. And, that unless and until claims, or theories, were demonstrated to be false they could and should be accepted as true.

Popper’s concern was to ensure science was objective and rational rather than subjective and irrational. According to logical positivism as a philosophical approach deductive reasoning meets the criteria of being objective and rational and the only basis for claims of “proof”, while inductive reasoning always contains elements of subjectivity and irrationality and cannot support proof claims. But, science cannot proceed without inductive reasoning. So, according to Popper, falsification reduces the subjectivity and irrationality of inductive reasoning. Popper used his analysis and argument to differentiate between what he called science and pseudo science. The latter was any study and theory that was not capable of being demonstrated to be false. So, in this way of thinking any theory that is incorrigible is not scientific. But, how can theories be falsified? The main procedure within the scientific method is through experiment. This though is not always possible. Consider for example astronomy. It is not possible to manipulate planetary and galactic objects and collect data on the outcomes (Okasha, 2002). So, science and the philosophy of science in particular have produced alternative procedures and concepts.

Causal versus non-causal relationships
The first of these concepts is what is known as “theoretical identification” which replaces the causal explanations normally associated with the key aim of a theory. What this refers to is an association between an everyday and accepted concept and an esoteric scientific concept (Okasha, 2002). One of the examples given by Okasha is water, an everyday concept, and the formula H₂O. Science “explains” that water is composed of two molecules of hydrogen and one molecule of oxygen. It therefore predicts that when molecules of hydrogen and oxygen are combined in those proportions water will be the result. But, there is no explicit causal explanation; water being H₂O just is and it is not caused by being H₂O. The formula does tell us why or even how adding two molecules of hydrogen to one molecule of oxygen produces water.

An additional concept is that known as “inference to the best explanation” (IBE). IBE is a form of non-deductive reasoning which some argue is a form of inductive reasoning and others argue is different to induction but shares with induction the characteristic of being non-deductive. The approach is also described as “abduction” (Warburton, 2004) which is explored in more detail by Gold and colleagues in a later article in this issue. The concept is straightforward and self-explanatory; in cases where data and facts are lacking, all possible explanations are generated and considered and the one that best fits the data and facts that are available is accepted as the explanation until more data and facts become available. Many scientific theories have had and many still do have the status of IBE (Okasha, 2002). They remain as accepted theories until such time as they can be demonstrated to be false or until a “better” explanation is developed by the emergence of new data or facts.
What has the above discussion to do with HRD? It is hopefully clear that science has many problems and questions to do with achieving the goals of objective and rational explanations of observed phenomena. The developments in the philosophy of science we have summarised above are a series of attempts to deal with these problems. Dealing with the problems is in turn an attempt to maintain science and the status of scientific theories as objective and rational as opposed to subjective and irrational, using those words and concepts in a strictly philosophical sense. HRD as an area of academic enquiry and of professional practice is concerned with applying social science to the study of particular phenomena in human experience. A later article in this special edition will examine which human experiences are of concern to HRD theory. Here we are concerned with establishing what the idea or concept of theory might mean for HRD.

At this point in our analysis there seems to be a choice between accepting the possibility of achieving objective and rational theories or rejecting that possibility. This choice is characterised in philosophy as that between “realist” and “idealist” positions. The basis of the distinction is whether or not the material world exists independently of human perception and conscious activity. The realist position argues yes and the idealist position argues no; or at least that the answer to the question cannot be known. In the philosophy of science the question is finessed to that of the difference between observable and un-observable phenomena and the labels change to realist and anti-realist. The latter accepts that material reality which is observable has independent existence but rejects the idea that non-observable phenomena have that characteristic, while realism argues that there is independent existence in both cases. So, there are two separate but related choices; between realist and idealist and, depending on that choice, between realist and anti-realist.

In relation to HRD and our use of the notion of theory the fundamental questions are first to what extent as a human construct can HRD be conceptualised as independent of human activity and so to have independent existence, and second to what extent can HRD be observed in the same way that trees or rivers or chairs or tables can be observed. Those choices and questions of course face the social sciences as a whole. The analysis so far might also suggest that the question also faces the natural sciences, given that they have been the focus of the developments described so far. There are though additional factors and arguments to take into account in addressing the questions that have been developed in the history and sociology as opposed to the philosophy of science. These will be examined in the next section.

Possible and limitations of scientific theories
All approaches in the history and sociology of science suggest some problems with the simple interpretation of the meaning of the concept of theory summarised in the opening paragraphs of this article (Shapin, 1995). The seminal work of Kuhn (1996) on scientific revolutions is only one analysis, and indeed one of only a number of perspectives on the development of scientific thought that cast doubt on the linear, objective and disinterested advancement of scientific knowledge and understanding, (see for example Rouse, 1999, 2002). A significant line of questioning is the analysis of knowledge offered by Berger and Luckmann (1971), including scientific knowledge, as being socially constructed which has also laid the foundations for more recent and
more esoteric lines of questioning (see Benton and Craib, 2001). The work of historians of science and those in the sociology of scientific knowledge suggest and argue many bases for doubting that the concept of “theory” can be applied and used as a neutral term. These bases include the local nature of knowledge production, the (material and social) interests of knowledge producers, processes of professionalisation and the influence of societal and cultural factors on establishing what constitutes knowledge, scientific or otherwise. Kuhn’s contribution to these arguments has been highly influential and so merits specific attention in our analysis of the meaning of theory.

Scientific revolutions
The starting point in Kuhn’s analysis is that studying the history of scientific thought and the processes which generate theories, i.e. the “context of discovery”, is as important as studying the “context of verification”. So, Kuhn rejected the arguments and position of the logical positivists. This is related in part to the main focus of Kuhn’s interest which was how science develops and changes. That interest led to Kuhn’s famous formulation of scientific paradigms and his distinction between “revolutionary” and “normal” science. Paradigms according to Kuhn are worldviews within which normal science is conducted. The paradigm conditions and shapes science and related matters such as what questions are posed and what data is determined to be needed to answer the questions, and how that data should be generated. Theories develop and change within the boundaries set by the paradigm. A paradigm shift can only be achieved by a scientific revolution according to Kuhn. And a scientific revolution is as much a social as a scientific process. A paradigm shift is accomplished by political, social and cultural processes rather than by objective assessment of evidence. And to an extent that also applies to the conduct of normal science.

Kuhn’s work introduced three further ideas that question the possibility of objective and rational science. The first is widely accepted (Benton and Craib, 2001; Okasha, 2002) and simply states that there is no algorithm to guide choices between competing theories. And, more importantly, Kuhn argued that no such algorithm is possible. That being the case objective and purely rational grounds for validating theories is not possible. A second idea of Kuhn’s is that concepts used in science have meaning only in the context of the theory in which they play a part. To take a HRD example, this means that “learning” has different meanings within different psychological theories of learning and a different set of meanings again when the concept is used in sociological theories. And so in theorising HRD there will be variation according to the theory of learning informing that theorising. In simple and general terms a behaviourist psychologist will have a different view of HRD to a cognitive psychologist and each of those will be different to a sociologist theorising HRD. This idea is related to Kuhn’s argument on the incommensurability of scientific paradigms; in other words paradigms as world views include un-stated and un-acknowledged assumptions that influence understanding of the meaning attached to terms and concepts. The final idea of interest is also related to incommensurability and is known as “theory-ladenness of data”. This idea states that data can never be neutral. As we saw above, scientific paradigms shape what constitutes data. Therefore, any theory in any paradigm influences what is seen as data and how it is interpreted. Data such as those generated by experiments and/or observations therefore cannot be relied upon to justify theories; theories are immanent in data.
Summary
In summary, the work of Kuhn provides many reasons for questioning the view of science and so of theory as being objective and rational and many reasons for viewing science and so theories as being outcomes of social processes as much as so-called scientific investigation. There is additional work and additional writers who support arguments similar those of Kuhn. Shapin for example argues that the scientific method is an epistemology devised to establish “truth” or “fact” in opposition to other epistemologies concerned with “opinion” or “value” (Shapin, 1995). But, the epistemology is a social construction just as others are and so cannot have greater weight to truth claims. The “strong programme” in the sociology of science was derived from the work of Kuhn but went much further in attributing social and cultural influences to the beliefs of scientists.

Given that there are limitations to what “science” can claim and achieve there must be limits to what the concept of “theory” can claim and achieve. But, this does not mean that theory offers no possibilities. As Shapin (1995) points out, for many of us there is no necessary step from saying there are multiple interpretations to saying there are multiple realities. A realist position implied by that remark has legitimacy in twenty-first-century social science and so, within that context, attempts and intentions to explain phenomena do too. Theories are possible and their explanations are, possibly, true and valid to a greater or lesser extent. It is the general and universal nature and application, i.e. scientism, that is limited.

Implications for HRD
This brief overview relies mainly on theory as a concept developed in the natural sciences. There are of course those working in the social sciences that would reject the very notion or possibility of theory as the concept is used in the natural sciences and its relevance to social as opposed to natural phenomena. Less extreme positions might also question relevance (see Benton and Craib, 2001, for a discussion of both extreme and less extreme positions). Since HRD is without argument a social phenomenon we acknowledge the potential criticism. But, we would argue that social science is still science and so theorising HRD has to take account of the established meaning of the concept of theory as well as its possibilities and its limitations. We would also argue that is worthwhile since as Torraco (1997) points out and as has been said before, theories have practical value. What might we take from this examination of the notion of theory that can be usefully applied in theorising HRD?

There are a number of possibilities and we suggest three of potential value. First, any theory needs to be overtly located in a realist or anti-realist position. To do this is to say something about the nature of HRD and the phenomenon that is being theorised. It seems to us that to leave that question unexamined in a theory is to limit communication within the HRD community since it raises the possibility of incommensurability in the Kuhnian sense. Second, we suggest that a “scientific revolution” in that same sense may be occurring in HRD. It might be the case and one worth examining that the “performance” versus “learning” positions on HRD is an example of a paradigm “war” (Rigg et al., 2007) and so a scientific revolution. That though is not what we have in mind. The recent rise in research and writing on “critical HRD” may in our view constitute an attempt by some academics to shift an established paradigm based on conventional assumptions to a new paradigm based on a different
set of assumptions (IBID). Finally, we want to argue that HRD cannot utilise the notion of theory with the meaning attached to it within logical positivism. We would argue that is an aspiration that can neither be achieved nor is desirable. HRD is socially situated and practised. As such any theorising of HRD is similarly socially situated. We can leave debates and arguments on how far that assertion applies to the natural sciences to the philosophers and sociologists of science. But our reading of their work persuades us that HRD cannot be treated in the same way as chemistry or physics.

References

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