Ontology, Epistemology, Strategy and Method in Educational Research. *A Critical Realist Approach*

Ontología, epistemología, estrategia y método en investigación educativa. Un enfoque del realismo crítico

Ontologie, épistémologie, stratégie et méthode dans la recherche educative. Une perspective du réalisme critique

Ontologia, epistemologia, estratégia e método em pesquisa educativa. Um enfoque do realismo crítico

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Abstract

This article focuses on the development of a meta-theory for the use and application of qualitative strategies and methods. This meta-theory is sometimes referred to as critical realism, though it is important to acknowledge that there are in existence a number of rival theories that are described as critical realist. The suggestion being made here is that methods and strategies used by researchers to collect and analyse data in the world cannot be a-epistemic, but in every case are underpinned by ontological and epistemological frameworks. In particular, the issue of causality is central to any framework that is adopted. Since researchers cannot avoid these philosophical issues then it is obligatory for them to base their methods, strategies and modus operandi on a meta-theory which is both more rational and, in addition, fully comprehensive.

Key words plus

Education, Research, Methodology, Epistemology, Ontology.

Transference to practice

Critical Realism has profound implications for educational practices, educational policies and research practices. Steering a path between voluntarism and reification in education is always problematic; but if it is to be successfully negotiated, then, firstly, a coherent meta-theory needs to be articulated and enacted, and secondly, reifying structural forms needs to be avoided, as this leads to a distortion and misunderstanding of social life and educational matters. The application of critical realist practices has transgressive implications.

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Palabras clave descriptor
Educación, investigación, metodología, epistemología, ontología.

Resumen
Este artículo se centra en el desarrollo de una metateoría para el uso y la aplicación de estrategias y métodos cualitativos. Esta metateoría a veces se denomina realismo crítico, aunque es importante reconocer que existe un número de teorías rivales que se describen a sí mismas como tal. Aquí se sugiere que los métodos y las estrategias utilizadas por los investigadores para recolectar y analizar los datos en el mundo no pueden ser aepistémicas, debido a que en todos los casos están sustentados por marcos ontológicos y epistemológicos. La cuestión de la causalidad es fundamental para cualquier marco que se adopte. Dado que los investigadores no pueden evitar estos problemas filosóficos, es obligatorio para ellos basar sus métodos, estrategias y *modus operandi* en una metateoría que es, a la vez, más racional y exhaustiva.

Transferencia a la práctica
El realismo crítico tiene profundas implicaciones para las prácticas educativas, políticas educativas y la investigación. Dirigir un camino entre el voluntarismo y la reificación en la educación es siempre problemático, pero si ha de ser negociado con éxito, una meta-teoría coherente debe ser articulada y promulgada y, en segundo lugar, se debe evitar cosificar formas estructurales, ya que esto conduce a una distorsión e incomprensión de la vida social y de los asuntos educativos. La aplicación de prácticas críticas realistas tiene implicaciones transgresoras.

Mots clés descripteur
Education, recherche, méthodologie, ontologie.

Résumé
Cet article se concentre dans le développement d'une métathéorie pour l'usage et l'application des stratégies et méthodes qualitatifs. Cette métathéorie est connue parfois comme réalisme critique, même s'il est important reconnaitre qu'il y a un nombre de théories rivales connues comme réalisme critique. La contribution qu'on fait ici c'est montrer que les méthodes et les stratégies utilisées par les chercheurs pour obtenir et analyser les données dans le monde ne peuvent pas être a-épistémiques, étant-donné que dans tous les cas elles sont supportées par les cadres ontologiques et épistémologiques. Notamment, la question de la causalité est fondamentale pour n'importe quel cadre qu'on adopte. Etant-donné que les chercheurs ne peuvent pas éviter ces problèmes philosophiques, alors il faut qu'ils établissent leurs méthodes, stratégies et modus operandi dans une métathéorie qui est à la fois plus rationnelle et aussi plus exhaustive.

Transfert á la practique
Le réalisme critique a des profondes implications pour les pratiques éducatives, politiques éducatives et de la recherche. Diriger un chemin entre le volontarisme et la réification dans l'éducation est toujours problématique ; mais s'il a pu être pacté avec succès, alors, d'abord, une métathéorie cohérente doit être articulée et promulguée, et puis, il faut éviter chosifier les formes structurales, car cela conduit à une distorsion et incompréhension de la vie sociale et des aspects éducatifs. L'application de pratiques critiques réalistes a des implications contrevenantes.

Palavras-chave descritor
Educação, investigação, metodologia, epistemologia, ontologia.

Resumo
Este artigo está centrado no desenvolvimento de uma meta-teoria para o uso e a aplicação das estratégias e métodos qualitativos. Esta meta-teoria se denomina algumas vezes realismo crítico, ainda que seja importante reconhecer que existe um número de teorias diferentes que se descrevem a si mesmas como realismo crítico. A sugestão que se faz aqui é a de que os métodos e as estratégias utilizadas pelos pesquisadores para reunir e analisar os dados no mundo não podem ser a-epistêmicas, devido a que em todos os casos estão sustentados por marcos ontológicos e epistemológicos. Em particular, a questão da causalidade é fundamental para qualquer marco que se adote. Dado que os pesquisadores não podem evitar estes problemas filosóficos, então é obrigatório basear seus métodos, estratégias e *modus operandi* numa meta-teoria que é ao mesmo tempo mais racional e além disto, exaustiva.

Transferência à prática
O realismo crítico tem profundos envolvimentos com as práticas educativas, políticas educativas e com a pesquisa. Dirigir um caminho entre o voluntarismo e a reificação na educação é sempre problemático; mas se é necessário negociar com sucesso, então, em primeiro lugar, uma meta-teoria coerente deve ser articulada e promulgada, e em segundo lugar, deve ser evitado coisificar formas estruturais, já que isto conduz a uma distorção e incompreensão da vida social e dos assuntos educativos. A aplicação de práticas críticas realistas tem implicações transgressoras.

Introduction

Methodology is a theory (or set of ideas about the relationship between phenomena) of how researchers gain knowledge about the world and why. This provides researchers and readers of research with reasons for using specific strategies and methods in order to construct and develop particular kinds of knowledge about social and educational phenomena. Methodological interest in the design, process and outcomes of research requires researchers to do more than draw conclusions from evidence or data that they have collected, since it is the researcher's interpretation of what is worth knowing and how to collect the knowable and then interpret it, which is the essence of the research process. This points to how the interpretative act is positioned within a variety of contexts, and these are epistemic, cultural, historical and, even more importantly, methodological. And what this means is that research methods and strategies, whether we describe them as quantitative or qualitative, are always in a binding relationship with epistemology (or knowledge) and ontology (or reality). Developing a meta-theory is therefore a pre-requisite of any research process. This article will focus on one such meta-theory, critical realism, though there is no longer a general agreement amongst social theorists about its foundations.

Critical realists, such as Roy Bhaskar (1998; 2010), understand the world as stratified, drawing a distinction between the domains of the real, the actual and the empirical. They also believe that objects and generative mechanisms in the world have causal powers which may or may not be exercised, but still exist independently of human cognition or the individual's ability to know them. Further to this, Bhaskarian critical realists differentiate the transitive world of knowing from the intransitive world of being; and accept that the social world incorporates mechanisms at different levels with elements of these mechanisms irreducible to those of the level from which they emerged. This implies that objects have emergent properties, which interact with each other, and as a result new properties are created or emerge from old combinations of objects. Critical realists designate the relation between structure and agency as the key framing device at the ontological level; and furthermore, understand all observational or experiential statements as framed by a specific set of conceptual relations, that is, all observational or theoretical statements are in some sense theory-laden. As a consequence, any description of the world is both explanatory within a particular set of conceptual relations and potentially transformative of those relations. In short, educational processes take place in open systems.

This meta-theory includes a range of epistemological and ontological precepts. There is a social dimension to knowledge-construction, but this cannot categorically preclude reference to a world that is separate from the way it is being described. Conceptual framings and sets of descriptors are informed, constrained and enabled in a non-trivial way by the world or reality at the particular moment in time in which they are being used, and in turn the shape and form of the ontological realm is influenced by the types of knowledge that are being developed. Our conceptual frameworks, perspectives on the world, and descriptive languages, interpenetrate what we are calling reality to such an extent that it is impossible to conceive of a pre-schematised world (Putnam, 2004). However, this doesn't rule out indirectly-conceived references to the structures of the world. Knowledge of the world cannot be a simple representation (expressed as a series of facts) of what is out there in the world because the world is not entirely

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This paper of reflection is based on the research "Curriculum Development (with Leaton Gray, S. and Auld, E.), Curriculum Project for the International Baccalaureate Organisation (IBO), August 2013-January 2014". The paper on the practical application of a meta-framework for conducting research. It focuses on the development of a meta-theory, sometimes known as critical realism, for the use and application of qualitative strategies and methods.

separate from those mediating devices that human beings have developed to make sense of it. And, as a result, it is important to avoid essentialising knowledge and its divisions and thus neglect the transitivity inherent in its development (Bhaskar, 2010). And finally, any knowledge claim has to be placed within the space of reasons (Brandom, 2000), which means that this claim is discourse-specific and positioned within conceptual frameworks that precede it in time and place and have implications for future use. These precepts are implicated in the choices critical realists make about the strategies and methods they use to collect data about the world.

Mixed methods approaches

There is a need to resolve the issue of whether a mixed methods approach (Bryman, 2006; Koenig, 2006; Mason, 2006; Dicks, Soyinka & Coffey, 2006) is viable, and, more importantly, credible. Three types of argument have been suggested to support this approach. The first of these is that the different paradigms that have traditionally been associated with qualitative and quantitative research approaches are in essence epistemic, and thus have little to do with the collection and analysis of empirical data. This last is a practical activity, and should be distinguished from philosophical pragmatism. A version of philosophical pragmatism pervades the writings of C. S. Peirce (1992) whose pragmatic maxim was that any theory of meaning, and thus of sense, takes as axiomatic that the contents of a proposition is the experienced difference between it being true or false. This provides a genuine epistemic justification for the collection and analysis of data and for providing a description of the world, even if such an approach has been criticised (Bhaskar, 1998). However, this philosophical pragmatic argument is different from the argument set out above, which is that as social researchers of the world and in the world we should not concern ourselves with issues that are essentially the province of philosophers, those of how we can know the world (i.e. epistemology) and what this world actually is (i.e. ontology).

There are two principal problems with accepting this a-epistemic position. As researchers, we are committed to finding out about what is happening in the world, and thus to rejecting those positions that are not credible accounts of what we are referring to. We are concerned with issues of truth (expressed in the first instance as knowledge and in the second instance as being) and thus to what truth is. And we therefore have to decide between different versions of the truth. Bridges (1999) has suggested five different types: truth as correspondence, truth as coherence, truth as what works, truth as consensus and truth as warranted belief. Regardless of the choice we make between them, we are still committed to a notion of research as being more than a pragmatic exercise in resolving practical and ethical problems in the research process.

A second argument for suggesting that qualitative and quantitative methods and approaches can be combined is an acceptance that these methods and approaches are underpinned by different epistemological and ontological philosophical positions, but these different philosophical positions are not as distinct as they appear to be (Haack, 2008). In other words, their differences can be resolved. There are two variants of this argument. The first of these suggests that, in contrast to positivism, the elements of the world expressed as variables (a pre-requisite of quantitative methodologies) should not be treated as facts, but as "ficts" (Olsen, 1996) (expressed in a numerical form), which may not be true representations or referential phenomena, but are useful devices for warranted arguments

developed by researchers who use statistics. A second variant of the argument being expounded here is that intensional idioms, used by qualitative researchers because they refer to the intentions of human beings, and are thus understood by these researchers as central to social reality and human life, can be reconfigured as extensional expressions. These are more commonly used by quantitative researchers because they refer to the extensional properties of qualia, such as breadth, depth, time-sequencing and positionality; in short, those properties which can be better expressed as variables, so as to allow the researcher consistently to use extensional expressions in their descriptions of reality. We might want to describe this as the false duality argument, and what it seeks to do is resolve the divide between two seemingly irreconcilable paradigms. Whatever process is undertaken, this reconciliation still means that some meaning is lost, as this is essentially a reductionist exercise.

A third argument for resolving the divide between qualitative and quantitative methods and approaches and thus allowing the development of a mixed methods framework, which is coherent, is what has been called a warranty through triangulation argument. Here, instead of suggesting that the qualitative element, for example, can be translated into something which fits the quantitative element, or that the researcher shouldn't concern themselves with philosophical issues as in our first argument, this argument accepts that quantitative and qualitative approaches have different epistemic and ontological bases. However, if both are focused on the same research problem and similar conclusions are drawn, then the researcher can have a greater degree of confidence in their findings. The immediate problem with this approach is that if there is disagreement between the two elements and not concurrence, then this cannot give the researcher more confidence in their findings; indeed, the researcher is then unable to work out which of the two approaches is more reliable. Blatchford, Bassett, Goldstein and Martin (2003) work on classroom size effects makes claims based on this form of warranty.

What I want to suggest is that in the first instance, as researchers, we are committed to some notion of the truth and that this depends on the adoption of credible ontological and epistemological stances. And further to this, traditional qualitative approaches (where these are understood as the collection of data about relationships in the world between agents and structures, where the latter includes institutional, discursive and agential forms (Scott, 2008), are essential tools in the arrays of methods that all types of researchers should have at their disposal. Researchers are in the business of developing knowledge and this means that they also have to have some understanding of what this knowledge is and what it refers to.

Given the nature of the world, its ontology, we then move to its epistemology, since knowledge has to have a referential element; it is knowledge about something. And from this we move to methodology or what we should do as researchers and observers of the world in order to develop knowledge about it. The field of education is now dominated by the use of quantitative, trend-identifying, predictive methodologies such as quantitative modelling, randomised control trials, surveys, brain imaging and the like; and research funders are now specifying that these are the most appropriate methods to use. As researchers we need to move from studying and understanding manifest phenomena to the structures that generate them, since we are dealing with a world that is stratified. If our understanding of those manifest phenomena is misconceived, because, for example, we are using inappropriate methods, then our understanding of

deeper lying structures, the actual and vertexical relations, moments and meeting points between these structures and the many manifestations of agency that take place in the world, is likely to be limited.

Causality

One of the key elements in a critical realist methodology is a particular and specific notion of causality and believing in this generative theory of causation also includes a belief that reasons for actions can be construed as causes. Critical realists draw a distinction between successionist and generative theories of causation (Bhaskar, 1998; 2010). If we concentrate on experimental methods and approaches to social research, this will bring out some of the arguments in favour of generative rather than successionist theories of causation. The use of the experimental method necessitates a belief in a successionist theory of causation. Successionist theorists, following David Hume's notion of causality as spatio-temporal contiguity, succession and constant conjunction (Hume, 1738/2000), argue that causal relations cannot be observed. Researchers can observe successive occurrences, but they can never understand and record the causal mechanism that connects them. The experimentalist operates by randomly allocating subjects to control and experimental groups and observing the differences. Causation, therefore, is external and non-observable, and the key is to distinguish between the causal relationship and any spurious associations. Generative theories of causation are different. Causation acts internally as well as externally, and it describes the transformative potential of phenomena. Causality is understood as a tendency of objects, which may or may not be realised, and this has implications for how social and educational researchers should act, and whether it is possible to use descriptions of current educational settings as a basis for predictions about future ones.

Social reality then, it is argued, has ontological depth. Social objects are structured in various ways, and because of this, they possess powers (Brown, Fleetwood & Roberts, 2002). The powers of these structures (or mechanisms) are of three types. Powers can be possessed, exercised or actualised. Objects can be said to possess powers even if they are not triggered by external circumstances and combinations of other powers; they lie dormant. On the other hand, powers which have been exercised have been triggered and are now having an effect in an open system. Such powers are interacting with other powers of other mechanisms within their sphere of influence. Finally, powers that have been actualised are causally efficacious within the open system they are operating in, but in this case they have not been suppressed or counteracted. Embodied, institutional or discursive structures can be possessed and not exercised or actualised, possessed and exercised, or possessed and actualised. As a result, a causal model based on constant conjunctions is rejected and replaced by a generative-productive one, and objects and relations between objects have emergent properties, including discursive objects operating in the epistemological domain. Determining between instances of structural powers lying dormant, being exercised or being actualised is the central task of any research project.

Some of the problems associated with the experimental method have already been referred to, and these provide clues as to the reasons for their underuse in social and educational research. Effects may be more subtle or difficult to conceptualize than researchers allow for. There is the temporal dimension where effects may not show up or may only partially show up

at any one moment or series of moments. It may not be possible to display them in quantifiable form; or at least, if they are displayed in this way, researchers are involved in a reductionist and decontextualizing process in order for them to meet the two essential conditions for enquiry into closed systems. These are that there must be no change in the object over a period of time and across different cases, and those external conditions which allow them to operate must remain constant. In other words, the experimentalist needs to be satisfied that the construct being examined is the same across all the cases being studied. Experimental methods for determining causal mechanisms in the social world, which involve the investigator in comparing cases of the phenomenon and identifying similarities and differences, are not appropriate in settings which do not naturally conform to open systems, and cannot be constructed to allow them to do so.

At the ontological level, reality is stratified and the properties of objects, including people, are emergent. Most frequently cited by critical realists is the distinction between the actual, the empirical and the real. The actual refers to things and events in their concrete historical contexts, only some of which will ever be known or experienced by human beings. The empirical is related to the actual, consisting of those phenomena that are experienced by people in the world. The actual and the empirical are both "real", and consequently, are a part of the third domain. But the domain of the real also includes the "structures" of objects, for example, the relations between their constituent parts and the "emergent properties" to which their structuring gives rise. Since these powers of structures, when exercised, may bring about certain effects, we can describe them as generative mechanisms. An example of this is class size effects, where smaller class sizes might not have any effect on learning, might have an effect in combination with a number of other emergent properties of objects, or are causally efficacious within the open system because they have not been suppressed or counteracted.

Theories which predict that a pattern of events will hold true and continue into the future necessarily imply that if human beings are confronted by choices they have to make they will make the same choices that they made in the past. There are two possible explanations for this. The first is that choice in this instance is illusory, and thus they are simply responding in a mechanical fashion to a stimulus. And the second is that they are making choices, but the choices they make are the same as the ones they made before (because they are the most rational).

Those subscribing to empiricist and positivist philosophies claim that it is possible to predict events, and this is founded on the idea that both the original account and the predicted account are adequate in all essential respects. Critical realists, on the other hand, do not accept that it is possible to make law-like predictions about social and educational matters. What this means is that laws should not be thought of as constant conjunctions, or even as determinate causal sequences, but as tendencies of powerful objects, and these are understood as the properties of those objects, and not as predictive accounts of behaviours yet to be performed.

This has implications for how social and educational researchers should act, and whether it is possible and appropriate to use descriptions of current educational settings as a basis for predictions about future ones. Scientific realists and statistical positivists generally subscribe to a Humean theory of causality, and this is founded on the idea that though it is not possible to observe a relation between cause and effect, it is possible to identify a persistent association between two or more events, and then infer a causal relation. Objections to this point of view have been frequently made. It cannot account for spurious associations or order cause and effect, and there is no guarantee that all the possible interacting variables have been identified. Furthermore it is reductionist in kind because it treats these variables as real, and therefore elides epistemology with ontology.

An opposing view of causality is that researchers cannot observe such relations, and in addition, they do not exist in nature since events are not caused. There are only apparent regularities, and therefore what is understood as a causal relationship is a product of chance, and is thus randomly produced. Regardless of whether any investigation of those supposed causal relations has taken, or is taking, place, no work is ever performed by a phenomenon on another, causing changes in the latter. There is nothing in nature which causes anything to happen.

This is an extreme version of causality; effectively, a denial of causality as ontologically real. A further argument, in opposition to this, is that in nature, again regardless of any act of knowing, causal work can take, and has taken, place; however, the observer or researcher is not able to either know that it has taken place or what the precise causal sequence is that has occurred. A reasonable response to this would be a belief in the randomness of nature. Social researchers and observers may be wrong about the world, but they have no means of knowing that they are wrong, and, thus for all practical purposes, they have to carry on in their lives as if they were right. On the other hand, if they genuinely believe that they cannot know what reality is like, then they may decide, and have good grounds for making such a decision that there are causal mechanisms in the world. In this case, they

are literally imposing a set of causal conditions on the world which are not replications, reproductions or simulations of what exists in nature, but constructions or inventions. And given the looping nature of the relationship between ideation and reality (Hacking, 1999), then these inventions or constructions may become real.

The first of these two arguments suggests that causality is an ontological fiction, and the second suggests that causality is an epistemological construct and nothing more. However, despite the apparent impasse here, there is another way of looking at the problem, and this is to question the starkness of the distinction that is being made between causality and randomness. For example, researchers can say that some things are caused, but these coexist with a number of random events; or they can suggest that the only two alternatives on offer (randomness and causality) do not cover all the possible descriptions that could be made of objects and appropriate knowledge of them.

A more radical solution is to argue that there are different types of causes and they are different in kind because they operate in different ways; a person having a reason for doing something which also causes them to do it, such as keeping an appointment, is different from that person not being able to leave a room because the door is locked. If asked what caused them to do it, they might provide a different reason for their action than the one which motivated them in the first place or conditioned their action. This however, is not a refutation of the belief that reasons can in certain circumstances be causes, but only an observation that an investigator may be misled about the actual reasons which caused another person's actions, or even that they may have been confused about what actually caused them to do something. This type of causal sequence is different from a causal sequence in which an object with its potential powers and liabilities comes into contact with another object, which both triggers a change in these objects and creates a new object with new powers and liabilities, though this needs to be qualified in so far as interacting effects may be offset by the workings of other mechanisms and other transfactual occurrences. In the latter case, there is no human intervention, in the former case there is human intention.

In order to determine whether an event is caused or is merely randomly produced, one has to have an a priori theory about what constitutes a cause and underpinning this is a set of beliefs about how causes work. So, causes operate differently and are understood differently in a deterministic universe than they do in one with both random and caused events and happenings. Events can be caused even if the results are not as intended by any individual or group of individuals; in other words, predicting the future cannot be achieved by investigating what people intended should happen, though this might be a starting point.

A reason has to relate to the action it seeks to explain; it has to, in other words, be relevant. It takes the form of a justification for an action yet to be performed, and thus this implies that there are competing actions which a human being has to choose between. (This would include all the possible ways of behaving relevant to the proposed course of action.) It is valued in relation to other possible reasons for action, and these values are embedded in those structures of agency which act as conditions for the agent. What this means is that certain actions and therefore the reasons for those actions are privileged over other actions and their reasons, and this forms the backdrop to the choosing of a reason for an action and ultimately the performance of the action itself. A reason has a justificatory form; thus, it precedes an action (the reason refers to the action and to nothing else), provides the antecedent conditions for that action (it is therefore necessary in the sense that it could not and would not have been performed without the reason), and the sequence may not be repeatable.

A possible solution is to subscribe to a causal model that is probabilistic rather than deterministic in nature, although it would be difficult to decide whether this worked because the world is actually non-deterministic, or because it is too complicated to explain fully and so we need to allow for error. Attractive as this approach is, it contains some serious flaws. When it is suggested that it works (the model allows us to successfully predict within certain parameters of error), we still don't know why it works. Does it work because it is an accurate reflection of the way the world works or because in predicting the future researchers are activating mechanisms which will bring it about? Second, probabilistic reasoning does not account for every case being considered, but only a majority of cases; outliers are confined to the realm of either the unknowable (error at the case level) or theoretical inadequacy (the theory that is being used and which allows prediction is not sophisticated enough to account for every single case, but, though flawed, is the best there is). Thirdly, the empirical indicators used to construct the causal narrative may be inadequate for the task, and thus the theory that is developed is seriously flawed.

A final model is that events are caused but can only be retrospectively known. Events that have taken place are caused, i.e. by an intention of a human being or by a group of human beings or by the conjunction of two or more mechanisms; but to say that this causal sequence can be known only after the event has taken place is to say virtually nothing at all; and this is

because it tells us nothing about whether events are caused or not, but only whether and at what point we can identify a particular causal sequence. However, we can take this model one stage further and suggest a generative/productive view of causation. We can hypothesise a relationship and then try to work out what the mechanism might be. By mechanism it is meant literally that an object has causal powers to effect change in another object, these powers may or may not be exercised, and, even if they are, there is no guarantee that change will occur in the targeted object. Because we are dealing here with objects which are in part formed by our conceptualisations of them, that is, we can only know an object and its workings through a conceptual framework, and that choice of conceptual framework may influence the nature of the object, then generative causal sequences cannot safely be extended into the future.

In pursuing causal explanation via a constant conjunction model, with its stress on that which can be observed and controlled, researchers have tended to overlook the liabilities, powers and potentialities of the programmes and people whose behaviours they seek to explain. A number of points need to be made here. First, if this is correct, then the data-collection methods and the research design are going to be different. The reason for this is that researchers are now committed to understanding mechanisms which may not actually operate in practice (i. e. produce effects) because the external conditions for the release of the generative mechanism may not be present. Researchers therefore have to adopt a two-fold strategy: identifying the appropriate generative mechanism and examining the actual conditions which have produced the effects that they have observed. Since the reality, which they wish to describe, is social in nature and comprises social actors interacting with each other, they cannot simply assume that those actors are compelled to behave in particular and specific ways by causal mechanisms which they cannot observe. Causal relations need to be understood as configurations of social actors making decisions, whether appropriate or not, within certain determinate conditions, and further, the making of those decisions changes both the contexts in which future decisions are made and the identity of those self-same social actors.

A qualitative methodology

This meta-theory (sometimes referred to as a critical realist meta-theory) can be understood at the levels of strategy and method as a series of steps or action-sets (Bhaskar, 1998). The first entails a process of reasoning and analysing causal laws as expressions of the tendencies of natural and social objects. The second is resolving a concrete event occurring in a context into its components. The third is re-describing the components in theoretically significant ways. The fourth is a retroductive move or moving from describing the components of an event to proposing explanations about what produces or are the conditions for the event. The fifth is eliminating alternative possible explanations. The sixth is identifying explanatorily crucial explanations. The seventh is correcting earlier proposed explanations in the light of the temporarily completed analysis. And finally there is a need to explain the parameters of these subsequent explanations and how they relate to the ontology and epistemology of the world. An example of the use of this methodology is Olsen's (1996) examination of rural Indian social relations.

In the first instance then, educational researchers need to examine a range of phenomena. The first of these —structural properties at each time point— may or may not have been activated in the particular circumstances, but provide access to understanding the essential contexts of action. In doing this, researchers need to try to understand a second phenomenon interpretations of those relations by relevant social actors. Data needs to be collected about these interpretations because they provide access to those interpretations and their effects. Instead of assuming that a structural property always operates to facilitate human actions and interactions at every time point, it is important to understand when, where and how these different structures are influential; and furthermore, what the precise relationship is between them at specific moments and places during these interactions.

Researchers therefore need to gather data on those relations between different structures at each time point, and those perceived relations between different structures at each time point by the relevant social actors. This is a necessary part of the research process for two reasons. First, it provides access for the researcher to those real relations referred to above. Second, social actors' perceptions of those relations constitute a part of them. They may also be motivated by unconscious forces which compel them to behave in certain ways and which may conflict with the accounts they give of their reasons for action. By examining their intentions, it is possible to make a judgement about how much they know and how this impacts on decisions they make.

Educational and social researchers also need to consider the unintended consequences of actions. Some activities may be designed, and thus have a degree of intention behind them, which may change those structural properties; others less so. But more importantly, all actions have unintended consequences to some degree. After each interaction, however limited, its effects on those structures, which provide

the contexts for future exchanges and interactions, need to be assessed. This last requirement for research therefore refers to the subsequent effects of those intended and unintended actions on structural properties. Finally, there is the focal point of any investigation: the degree of structural influence and the degree of agential freedom for each human interaction. This is the crux of the matter because it allows the researcher to understand the complex relationship between agency and structure at each time point.

What I have suggested here applies to education as much as it does to other social areas for investigation. Steering a path between voluntarism and reification in education is always problematic; but if it is to be successfully negotiated, then, firstly, a coherent meta-theory needs to be articulated and enacted, and secondly, reifying structural forms needs to be avoided, as this leads to a distortion and misunderstanding of social life and educational matters.

About the author

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