

# Realism, Regularity and Social Explanation

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## 1. INTRODUCTION

Within the British context, critical realism<sup>1</sup> has emerged as the main defender of the idea that social inquiry can be *scientific*. In opposition to social constructionist, postmodernist and interpretivist approaches, realists have argued that a science of social life is possible and desirable (see for example Bhaskar, 1979; Collier, 1994). Such a science is not, however, to be based upon outdated positivist understandings of scientific activity. Rather, it will be founded on realist principles—for example those established in Roy Bhaskar's analysis of natural science (Bhaskar, 1975, 1986)—which are argued to provide a more defensible account of the practice of scientific investigation and the form of scientific knowledge. However, the transference of these arguments to the social sciences is not straightforward. Bhaskar's remark that his volume on social science, *The Possibility of Naturalism* (1979), might as easily have been titled *The Impossibility of Naturalism* (reported in Archer, 1998, p. 190) suggests that social science cannot be unproblematically modelled upon natural science, and many realists concur that there are important differences between the two (see for example, Outhwaite, 1987; Sayer, 1992; Archer, 1995; Collier, 1994).

In this article we will be investigating an issue closely related to the naturalism question: the consequences for social science of the absence of experimental techniques.<sup>2</sup> Realists recognise that this poses an important problem for social science. Whereas the natural sciences can often use experiment to identify the causal mechanisms of structures in the natural world, the social sciences cannot perform such experiments, making the causal influence of the structures of the social world hard to identify (Bhaskar, 1979; Sayer, 1992). We will consider various responses to this problem, including a range of social scientific techniques put forward by realists such as Bhaskar, Andrew Sayer and Andrew Collier as surrogates for experimental control. We will argue that these techniques are of dubious value, and that a form of inquiry which relied upon them

could not be considered scientific on consistently applied realist criteria. The article then turns to consider a more promising surrogate for experiment: the search for various forms of regularity to reveal the operation of structures.<sup>3</sup>

## 2. THE INITIAL PROBLEM: SCIENCE, REGULARITY AND EXPERIMENT

In order to understand the issues facing realist social science we must first consider the realist account of the natural sciences, as laid out in *A Realist Theory of Science* (Bhaskar, 1997 [1975]). The realist perspective is developed by criticising positivist understandings of natural science, which suggest that scientists are attempting to locate universally occurring regularities of events such that the occurrence of Event C is always followed by the occurrence of Event E. A positivist such as Hempel suggests that scientific laws have the following form:

In every case where an event of a specified kind C occurs at a certain place and time, an event of a specified kind E will occur at a place and time which is related in a specified manner to the place and time of the occurrence of the first event. (Hempel, 1965, p. 231–2)

In criticism of the positivist account, realists suggest that the search for universal regularities (constant conjunctions) of events could not be the point of scientific activity, as no such regularities exist. Events do not follow each other in inexorable sequences of cause and effect, because they are frequently determined by a multiplicity of influences. Events such as the falling of a leaf to the ground, or the production of a tree from an acorn, are determined by a range of influences with the result that the outcomes run contrary to any positivist law that could be specified. For example, although we may know that the Earth's gravity will have an effect on a leaf as it falls, we cannot specify that the operation of gravity (Event C) will always cause the leaf to accelerate at some particular rate (Event E) because other factors may have an influence, e.g. a gust of wind that causes the leaf to rise instead of fall. According to realists, the ubiquity of situations of multiple influence in the natural world means that there are few or no cases where universal regularities of events actually occur. The positivist search for universal regularities conceived in this way is bound to end in failure.

Realists do not believe that science should therefore be abandoned. Rather, they suggest that positivist thinkers misidentified its object in the first place. Instead of searching for universal regularities, natural scientific investigation is, in fact, primarily concerned with identifying structures. A structure is an entity that has the causal powers to influence events. However, the exercise of a structural power is not necessarily associated with a particular outcome at the level of events. This is because there may be a multiplicity of structures operating at any time, each exercising an influence upon, but not determining, the actual event that occurs. For critical realists, structures can be *real*, but not *actualised* at the level of events.

The existence of multiple influences upon events poses a difficulty for scientific investigation. If a plurality of influences is operating to produce events, it is difficult, if not impossible, to delineate the influence of any one structure. This is where experiment plays a role in some natural sciences. The point of experiment is to isolate the operation of a particular structure, by controlling or excluding other structural influences. The aim is to produce a regularity of experimental result that displays the operation of a single structure, so that, within the experimental situation, the conditions for the exercise of structural powers are constantly conjoined with the event that displays their influence. If a constant conjunction of events is achieved, then the experiment can be said to have produced a "closed system" (Bhaskar, 1997, p. 70). However, investigation cannot stop with the production of an experimental regularity. Rather, this regularity should be taken as an indicator that there may be a structure producing these effects, and investigation must attempt to identify this structure. As Bhaskar puts it: "It is in the movement from identification of an invariance to the mechanisms and structures that account for it that the logic of scientific discovery must be found" (Bhaskar, 1997, p. 168). For example, careful experimental work can identify invariant results in the combination of certain chemical substances. Science then attempts to explain these results by postulating the mechanism that produces them, specified, for example, in the theory of valency and chemical bonding.

Experiment thus provides an important tool for the identification of structures. This point raises an important question: is it possible to locate and individuate structures in non-experimental sciences? The social sciences largely fall into this category as it is frequently extremely difficult or impossible to manipulate the conditions and influences at play in social systems.<sup>4</sup> It is worth noting, however, that the absence of experiment is not an issue for the social sciences only. Writers such as Ted Benton (1981) and Tony Lawson (1997) have pointed out that the class of non-experimental sciences also includes forms of natural scientific inquiry such as geology and parts of biology. For this reason, the experimental/non-experimental divide does not map precisely on to the natural science/social science division. Nevertheless, in this article we are concerned specifically with the absence of experiment in social science.

Bhaskar argues that recognition of the stratification of the world between the *real* and the *actual* is necessary in order to make sense of the action of scientists as they intervene experimentally. However, in social science the issue is not only that of the intelligibility of the actions of social scientists, but that their objects of inquiry are themselves made up of *actions*. Realists do hold that the social world contains structures operating with a causal influence on events. The difficulty is in isolating the properties of any one structure, as social events are typically generated by the interplay of many structures, each in some sense referring to motivated actors whose actions are necessary to bring structures into being.<sup>5</sup> In the social sciences it is not possible to use experiment to control or influence certain structural influences in order to identify the characteristics of a single

structure. Realists thus suggest that social scientific investigation necessarily takes place in an “open system”, that is, in a situation where constant conjunctions do not occur and cannot be artificially produced.<sup>6</sup> As a result, the key task for realist social science is this: *to find a method of identifying social structures and their causal influence*. Without any such method (or set of methods) it would be difficult, if not impossible, to sustain the claim that social inquiry can be scientific, i.e. identify the structures that influence events in the social world. In the next section of this article we will review some of the surrogates for experiment proposed by realist thinkers, and explore their weaknesses.

### 3. SURROGATES FOR EXPERIMENT AND THEIR PROBLEMS

#### 3.1 Explanation but not Prediction

One response to the difficulties of inquiry conducted in an open system is Bhaskar’s suggestion that social scientific research must prioritise explanation instead of prediction. As he puts it in *The Possibility of Naturalism*:

The real methodological import of the absence of closed systems is strictly limited: it is that the social sciences are denied, in principle, decisive test situations for their theories. This means that criteria for the rational development and replacement of theories in social science must be *explanatory and non-predictive*. (Bhaskar, 1998 [1979], pp. 45–6, his emphasis)

It is a little curious that Bhaskar views the absence of decisive test situations as of “strictly limited” importance. Regardless, we must explore a little further his accounts of prediction and explanation. For Bhaskar, a structural theory cannot be tested on the basis of its ability to predict events. Even if a structural theory was correct, it would not necessarily be able to predict the events that would occur when the structure was exercised in an open system. As such, the failure of a prediction could not be taken as evidence for the inadequacy of a particular structure (Bhaskar, 1998, p. 129; Bhaskar, 1997, pp. 136–7).

Explanation, on the other hand, involves the theorising of events after their occurrence. For realists, it is possible to explain the character of events that have occurred in an open system, regardless of whether this is in the social or natural world. According to Bhaskar, explanation in open systems has four phases:

- (1) *Resolution* of a complex event into its components (causal analysis).
  - (2) *Redescription* of component causes.
  - (3) *Retrodiction* to possible (antecedent) causes of components via independently validated normic statements.
  - (4) *Elimination* of alternative possible causes of components.
- (Bhaskar, 1998, p. 129)

In other words, the process goes as follows. Firstly, the analyst separates out the causal components that have contributed to the event in question. He or she then tries to identify the structures that have produced these components. For each causal component, the analyst comes up with a hypothesis as to which structure might have produced it, then checks to see if the conditions for this structure's exercise were instantiated. If they were, then this confirms the influence of the structure. If not, then this eliminates the structure from the account, and different hypotheses must be made and checked in order to identify the structure that was involved.<sup>7</sup>

There is, however, a crucial problem with Bhaskar's idea that social scientific accounts of structure can be validated on explanatory grounds (Bhaskar, 1998, p. 46). The problem is that Bhaskar's model of open-system explanation does not *test* knowledge of structures but *relies upon existing knowledge of structures* in order to produce the explanation, a point noted by Andrew Collier (1994, pp. 162–4). That is to say, an event is to be explained using existing knowledge of structures, their causal influences, and the conditions for their exercise. Bhaskar himself acknowledges this when he refers to the use, in the *Retrodiction* phase, of “independently validated normic statements”, that is, knowledge about structures and their operation. It is this prior knowledge of the properties of structures, that is, their causal influence and the conditions of their exercise, which allows us to consider whether these structures have been involved in generating the event. As Bhaskar puts it in *A Realist Theory of Science*: “the activity of retrodiction presupposes the truth and applicability of the law used; the possibility that it is false is ruled out a priori” (Bhaskar, 1997, p. 135). Without knowledge of laws, we cannot engage in open-system explanation.

It seems, then, that the process of explaining an open-system event does not reveal information about structures but relies on it. Contrary to Bhaskar's claims (1998, pp. 45–6), the explanation of open-system events cannot be used to test or appraise theories. According to his own realist perspective, testing can only take place where there is a closed system that is a constant conjunction of events (Bhaskar, 1997, pp. 135–6). As such, Bhaskar cannot sustain his claim that social scientific explanation can produce structural accounts that are just as warranted as those in natural science<sup>8</sup> (Bhaskar, 1998, p. 46).

These kind of arguments have convinced the realist philosopher Andrew Collier that a truly scientific social inquiry is not possible. He suggests that, at best, social inquiry can achieve the status of an “epistemoid”, that is, a form of inquiry that puts to work the realist ontology of structures implicit in the experimental sciences, but does not have the ability to produce closure in order to locate those structures (Collier, 1989, p. 130). Because of the absence of closure, the “precision of physics is in principle unavailable” (Collier, 1989, p. 136) and we should have a “radically pessimistic view” of the “epistemic prospects” of social inquiry (Collier, 1989, p. 143). Nevertheless, the adoption of a structural ontology does provide some benefit to a form of inquiry, and Collier puts forward three examples

of inquiry into human beings that he considers to be epistemoids with “pronounced scientific features”: scientific socialism, linguistics and psychoanalysis (Collier, 1989, p. 145).

One can agree with Collier that there is some advantage for social inquiry in adopting a structural ontology without feeling overly enthusiastic about all of the forms of inquiry that he considers to be epistemoids (especially since most practitioners in the disciplines associated with scientific socialism and psychoanalysis—for example, sociology and social psychology—tend to reject their claims). This points to a more general issue. The idea that social inquiry should search for structures does not take us very far in considering precisely what those structures are. If the testing of structural accounts is undermined by the lack of closure in the social world, then there may be many forms of inquiry which share the “form” of a science but offer competing or antagonistic accounts of structures, with few or no grounds for deciding between them.<sup>9</sup> For example, it is not hard to imagine a structural account that could call on realist ontology yet which postulates the existence of specific structures that contradict those postulated by scientific socialists. Presented with this situation, Collier would have little basis for suggesting that scientific socialism was superior to its rival.<sup>10</sup> This is a pessimistic picture indeed of the social sciences. On the basis that such pessimism may not yet be warranted, it is worth considering further ways in which social inquiry might compensate for the lack of experimental closure.

### 3.2 Abstraction and Qualitative Investigation

Working from a realist perspective, Andrew Sayer (1992 [1984], 2000a, 2000b) is aware of the problems of open system research. He states:

The complex articulation and mutual reinforcement of structures typical of social life creates some of social science’s most difficult problems. Since we cannot isolate them one by one in experiments we are always prone to attribute to one structure what is due to another. (Sayer, 1992, p. 95)

The fact that social structures only exercise their powers in open systems makes the task of individuating structures and identifying their powers a difficult one. Nevertheless, Sayer suggests that realists do have ways of isolating structures that do not rely upon experimental control. He argues that by engaging in processes of abstraction, and posing qualitative questions,<sup>11</sup> realists can identify the properties of the structures that operate in the social world.

The process of abstraction works by examining a concrete object that is composed of diverse elements, and attempting to single out those elements conceptually (Sayer, 1992, p. 87). Sayer states that in the social sciences

We . . . have to rely on abstraction and careful conceptualization, on attempting to abstract out the various components or influences in our heads, and only when we have done this and considered how they combine and interact can we expect to return to the concrete, many-sided object and make sense of it. (Sayer, 2000b, p. 19)<sup>12</sup>

The distinct structural elements contributing to a complex open system object or event can be teased out in abstract analysis. In order to achieve this, the investigator will need to ask “qualitative questions” such as:

What does the existence of this object (in this form) presuppose? Can it exist on its own as such? If not what else must be present? What is it *about* the object that makes it do such and such? (Sayer, 1992, p. 91)

As an example of this kind of questioning, Sayer considers the relations between capitalism and patriarchy, and whether capitalism is necessarily patriarchal in form. He suggests that an abstract analysis demonstrates that it is not:

At the level of the most basic relation of capitalism—the capital wage-labour relation—it is contingent whether capitalists or workers are male or female. At this level capital is “sex-blind” . . . there seems to be nothing about class relations, exchange-value, production for profit, etc., which would make them dependent on the survival of patriarchy. (Sayer, 1992, pp. 91–2; see also Sayer, 2000b)

The relationship between capitalism and patriarchy, apparently, can be settled by abstracting out their characteristics and considering whether each requires the other, although it should be noted that it is on *Sayer’s* construction of capitalism that class relations necessarily have this sex-blind character. If it is true that there is nothing about *his construction* of those relations that makes them dependent on patriarchy, the stable occurrence of gendered inequalities in a domain in which Sayer believes a sex-blind structure to be operating would seem to call into question his characterisation of the structure. However, he does not draw this conclusion.

For Sayer, the features that qualitative analysis identifies are those which are necessary to a structure, rather than contingent to it (Sayer, 2000a, pp. 16–7). That is to say, it differentiates those features which *must* be part of a structure, which are part of its identity, from those which *may* be found alongside it, but are not intrinsic to its constitution. Sayer applies this distinction to the above example, suggesting that although capitalism and patriarchy are often found together, the relation between them is contingent, and thus capitalism does not need patriarchy in order to survive (though he does not ask the question how patriarchy can survive, given “sex-blind” capitalism).

The kind of inquiry which takes abstraction seriously and asks qualitative questions is termed “intensive research” by Sayer (1992, pp. 241–251). Intensive research looks at a particular case or small number of cases to produce causal explanations of objects and events. It attempts to locate the structures and causes

which produce the concrete conjunctions being studied (Sayer, 1992, p. 244). Such research will involve a detailed analysis of the specific cases, posing the kind of qualitative questions mentioned above, in order to locate the structures involved. Although intensive research only looks at a limited number of contexts, the knowledge of structures that it can produce can be more generally applicable, insofar as those structures are found elsewhere (Sayer, 1992, p. 249).

These aspects of Sayer's approach have been questioned elsewhere in a recent debate featured within *Sociology* (Sayer, 2000b; Holmwood, 2001; Sayer, 2001), where it is argued that the necessary features of structures and their operation cannot *realistically* be established logically or conceptually (Holmwood, 2001, p. 952). The problem is that the imaginative researcher can come up with many different conceptions of structures and their necessary properties, some of which will contradict each other. As argued in relation to Collier's epistemoids, the difficulty is not imagining kinds of structures, but testing out which ones actually exist and operate in the social world. Merely being able to conceptualise a structure in a certain way does not establish that such a structure exists and is operating in the world with the force of necessity (Holmwood, 2001, p. 953).<sup>13</sup>

It may appear as if Sayer can answer this point by emphasising his commitment to intensive research as a means of revealing structures. Doesn't such research identify which structures are actually operating in some particular social conjunction? We would suggest that the difficulties with such a claim can be elucidated by considering the comparable situation in natural science. Sayer is suggesting that we can examine a specific conjunction generated within an open system, and use qualitative methods of inquiry to identify the structures involved and their influence upon events. In effect, this is like saying that we can take an open system event generated by natural structures, and ask qualitative questions to identify what the structures must be like in order to have this kind of influence on events, what other structures they rely upon, and so on. These may be reasonable questions to ask, but the entire thrust of realist analysis in natural sciences has been to argue that such questions cannot be answered in open systems; they can only be answered where causal influences can be controlled in order to gauge their parameters and identify the structures generating them. Without such controls, any range of structures might be postulated to account for the events being considered, with no grounds for deciding between them. Qualitative questioning could help us to produce hypotheses about the kind of structures that might be involved, but it cannot act as a means for testing out those structural accounts to find out which is correct. We would suggest, then, that it is not possible to pick an open-system event in the social world and locate the structures generating it just by qualitative analysis.<sup>14</sup> Sayer's arguments do not help us to resolve the problem of research in open systems but return us to it once again.

As a final point, it should be noted that the absence of empirical controls upon qualitative analysis does not necessarily produce a proliferation of novel hypotheses regarding the structures that may be influencing social life. In fact, the

examples that Sayer gives of conceptual inquiry offer answers to qualitative questions which reproduce existing understandings rather than generating new ones (Holmwood, 2001, pp. 950–1). A clear case of this is Sayer's discussion of whether capitalism and patriarchy are necessarily related to one another (Sayer, 1992; Sayer 2000b). According to Sayer, they are not necessarily related, because the most basic relation of capitalism is the capital/wage-labour relation, and this is not gendered (Sayer, 1992, p. 91). How are we to assess Sayer's claim that the basic relation of capitalism is the capital/wage-labour relation? It seems at least *possible* that capitalism does not have that structure, and that it relies on some form of gendered division of labour. Sayer appears to resolve the issue by drawing on a previously existing non-gendered account of capitalism, as if the existence of such an account demonstrated the gender-blindness of capitalism (Holmwood, 2001, p. 953). Surely a key task for social science is to be able to *test* different accounts of social structure, and Sayer's qualitative approach provides no indication of how we are to do this. Rather *it allows the conservation of existing accounts by suggesting that they provide plausible answers to qualitative questions*. This is in contrast to natural scientific investigation, which alters the bounds of plausibility and forces us to rethink what is possible, on the basis of new evidence which suggests the existence of structures that were previously unknown. Simply reflecting on open system events and their possible constituents cannot provide convincing grounds for changing the boundaries of our understanding; something further is required.

### 3.3 Concept-dependence, Interpretation and Internal Access

Given that they have drawn attention to the difficulties of pursuing research in open systems, it is perhaps surprising to find some realists arguing that social scientific research may actually be relatively straightforward. Nevertheless, writers like Sayer and Bhaskar do just this. The basis of their claims is that there is a special interpretive or "internal" mode of access to structures that is available to social scientists but not to natural scientists. This is because social structures, unlike natural structures, are concept-dependent, and so their properties can be understood or interpreted. Of course, arguments about interpretation and social inquiry have a long history which cannot be considered here. However, it is possible and worthwhile to consider the realist version of such arguments and their validity.

The strong version of a realist interpretive argument is that interpretive access contributes to the testing of social scientific theories, in effect providing a surrogate for experiment. Sayer is committed to some form of this claim, and writes:

... explanatory evaluation is often easier in social than natural science because we have "internal access" through practice to many of the structures and mechanisms, and reasons and beliefs similar to our own may function as causes. (Sayer, 1992, p. 214)

In other words, it is often the case that social scientific analysts can go beyond the external analysis of structures found in natural science, because they can grasp the character of social structures from the inside (see also Sayer, 2000a, p. 18).

The weaker version of the realist interpretive argument is that the construction of theories, but not their testing, is aided by interpretive access to “concept-dependent” social structures. This argument can be found in Bhaskar’s work, and he writes:

How, then, given the mishmash nature of social reality, is theory-construction accomplished in social science? Fortunately most of the phenomena with which the social scientist has to deal will already be identified, thanks to the *concept-dependent* nature of social activities, under certain descriptions. (Bhaskar, 1998, p. 49)

Social scientists seem now not to be at a disadvantage, but to have a head-start over natural scientists because their subject matter is pre-interpreted; pre-interpretations which are necessary to the production of social events, and can be grasped by the analyst. The underlying argument can be found in Weber who writes that we can do more than is possible in natural science, for:

... we are in a position to go beyond merely demonstrating functional relationships and uniformities. We can accomplish something which is never attainable in the natural science, namely the subjective understanding of the action of the component individuals. (Weber, 1968, p. 15)

For Weber, and apparently for realists, the possibility of *going beyond* “uniformities” is advanced. Yet this occurs alongside a profound suspicion of uniformities, or regularities, and what is presented as “accomplishable” is, all too frequently, a qualitative analysis of the necessity of structures *for which there are no identifiable regularities*.

In relation to the strong version of the interpretation argument, it is worth noting straight away that Sayer’s strong claim that explanatory evaluation may be easier in the social sciences is modified by his own remarks about social structures. Although Sayer suggests that we can have internal access to structures because they are based on understandings, he does not believe that the understandings of actors provide a fully valid account of those structures. Sayer states

It . . . needs to be remembered that social reality is only partly text-like. Much of what happens does not depend on or correspond to actors’ understandings; there are unintended consequences and unacknowledged conditions and things can happen to people regardless of their understandings. (Sayer, 2000a, p. 20)

This point must undermine the idea that we can unproblematically evaluate social scientific understandings of structures by comparing them to the concepts

of actors which are part of the constitution of those structures. If actors can be wrong in their understandings of structures, it is hard to see how the possibility of internal access to these understandings can make the task of the social scientist easier than that of the natural scientist. Once the possibility of error is introduced, no aspect of actors' understandings can be assumed to be correct. Even if actors' understandings are partly correct, we cannot discern which parts are correct and which parts are not prior to investigation; this could only be revealed by testing. As such, the social scientist is still left in search of a means to test their understandings of structure; an internal understanding of the concepts of actors cannot be the basis for such a test. The problem of identifying structures and their influence in open systems is not resolved by the strong realist argument about interpretation.

This leaves us with the weaker claim that although actors' concepts are corrigible, they can still provide a useful starting point from which social scientific theorists can be developed. For the purposes of our current discussion, there is a sense in which this claim is unobjectionable but irrelevant, as it does not relate to the testing of theories. Indeed, Bhaskar admits that theories developed from actors' understandings must be tested empirically in order to demonstrate their merit (Bhaskar, 1998, pp. 49–50). And this, of course, returns us to the problem of how such a test is to be conducted.

Nevertheless, it is worth considering a slightly stronger claim of Bhaskar's regarding the structural insights within actors' understandings. Bhaskar suggests that certain social situations may work to clarify the understandings of agents. He writes:

It might be conjectured that in periods of transition or crisis generative structures, previously opaque, become more visible to agents. And that this, though it never yields quite the epistemic possibilities of a closure (even when agents are self-consciously seeking to transform the social conditions of their existence), does provide a partial analogue to the role played by experimentation in natural science. (Bhaskar, 1998 [1979], p. 48)<sup>15</sup>

Collier suggests that although this idea is only mentioned briefly by Bhaskar, it could be “developed to great profit” (Collier, 1994, p. 164). He states:

An economy in crisis is more “transparent” than a smoothly functioning one—it “reveals codes”, shows its works like the pipes in the Pompidou Centre. Mechanisms which are normally disguised by their close interaction with other ones break loose and so are actualized, whereas they normally operate unactualized—just as the law of gravity operates unactualized in your house until one day the roof falls down on your head. (Collier, 1994, p. 165)

This argument seems to rely upon the idea that only one mechanism/set of mechanisms<sup>16</sup> is operating, or decisive, in a crisis. If this were not the case, then there would be no reason to think that the mechanism in question would be “actualized”. This is because the actualization of a mechanism requires that its

causal influence be fully realized on the level of events, and this cannot occur unless no other mechanisms are influencing the events being considered. It is not immediately apparent, however, why a crisis can be assumed to only involve one mechanism. The operation of two or more unconnected mechanisms might just as well produce a crisis; the sum-total of the causal influence of those mechanisms could suddenly produce a dramatic effect that would not have occurred if only one mechanism was at work. If this is correct, then we have no *a priori* grounds for thinking that a crisis reveals the character of only one structure, allowing us to gauge its causal influence. A crisis may be a multiply-determined, open-system event like any other. This is apparent even in the example that Collier gives: the roof of a house collapsing. The collapse may not be the result of a single mechanism; it may be a result of two or more mechanisms conjoined, such as the influence of gravity and the force of an object being projected into the roof, for example, a cannon ball.

It is arguable that Collier and Bhaskar find the crisis argument appealing because they hold to a substantive theory that suggests that the most important set of structures operating in society are the structures postulated by Marx in his analysis of capitalism. On this basis, the crisis of capitalism is the moment where Marx's account of structures is revealed to be correct, the point at which the (less fundamental) countervailing influences drop away.<sup>17</sup> No matter how conceptually elegant Marx's theory is, what we are considering here is how such theories can be *tested*. As we cannot be sure *a priori* how many structures are operating in a crisis situation that occurs in an open-system, the outcome of a crisis cannot be straightforwardly considered to be the result of one set of structures. To assume that a crisis was the actualization of just one set of structures would be to unproblematically accept the assumptions of the theory being tested.

#### 4. REGULARITIES: A PLAUSIBLE ALTERNATIVE?

Up until this point, we have been critical of the surrogates for experiment put forward by realists. Nevertheless, we do not believe that it is time to give up hope for social science. In this section, we will argue that the search for regularities, when adequately conceived, can produce data similar to that produced in experimentation, data that can be used to test out theories. One of the key features of experimentation is that through the balancing, control and manipulation of influences it allows the production of regular events, the existence of which suggests (but does not prove) that a mechanism is at work. Theories can then be tested for their ability to account for the regularities which experiment has produced. Useful as experiments are, they are not the only way of producing information that can contribute to the development and testing of social scientific theories.<sup>18</sup> Firstly, regular events may occur spontaneously, without requiring the intervention of an experimenter. Secondly, the production of regular events may

not be required at all, because what we can call *patterns of connection* can be extracted from non-regular events using quantitative modes of analysis, and these can provide the information required for testing.

The use of spontaneously occurring regularities is discussed by the realist economist Tony Lawson in his volume *Economics and Reality* (Lawson, 1997, see especially Chapter 15). According to Lawson, social life contains spontaneously generated situations in which regularities are manifested at the level of events (we have dealt with one possible class of spontaneously generated regularities in the example of crisis situations). These regularities are only temporary rather than universal, because the regularity in question may always be disrupted by the operation of uncontrolled influences upon events. As such, Lawson calls these regularities “demi-regularities” (or demi-regs) defined as:

a partial event regularity which *prima facie* indicates the occasional, but less than universal, actualization of a mechanism or tendency, over a definite region of time-space. (Lawson, 1997, p. 204)

In other words, demi-regs do involve a conjunction between events (one kind of event following another), but this is not the universal conjunction of positivist laws. Rather it is a regularity manifested over a particular tract of time, and this regularity may be significant if it provides a glimpse of the causal influence of a mechanism while other influences are temporarily balanced or absent<sup>19</sup>. According to Lawson, such regularities occur frequently, and his examples include: “a relatively small proportion of children from poor backgrounds in the UK continue into higher education”; “average unemployment rates in western industrial countries are higher in the 1990s than the 1960s”; “an increasing proportion of the world’s population lives in cities” (Lawson, 1997, pp. 206–7). As with those that are experimentally produced, spontaneously occurring regularities can be used to test structural theories. Success in such a test will involve offering a coherent account of the regularities, and theorising the mechanism that produces them.

It is worth noting that the existence of such regularities suggests a slight modification to realist arguments about social systems. Typically, realists argue that social systems are necessarily open, partly due to the complexity of influences operating, and partly due to the creativity of human beings (see for example Bhaskar, 1997, p. 45; Sayer, 1992, pp. 121–5; Archer, 1995, p. 195). What is unhelpful about such claims is that they make no reference to the region of time-space in question, and yet this is intrinsic to Bhaskar’s initial definition of open and closed systems. As he states: “A closure is of course always relative to a particular set of events and a particular region of space and period of time” (Bhaskar, 1997, p. 73). In other words, the description of a system as closed or open refers to a particular slice of time-space in which there either was or was not a regular conjunction of events. This being the case, the general claim that social systems are open should be replaced by an acknowledgement that specific

regions of social activity in space-time may display regular conjunctions of events, and therefore, on Bhaskar's terms, should be described as closed during the period of time in which this regularity applies. Instances of spontaneously occurring regularities in social systems can thus be paralleled with experimentally produced regularities in the natural world. As with spontaneous regularities, experimental regularities do not last forever. They provide a regular conjunction of events in a discrete region of time-space, and this conjunction is lost when the experimental controls are removed. They thus produce approximations to closed systems for certain periods and regions, which then revert to being open systems.

Although it is important to note the parallel between spontaneously occurring and experimentally produced regularities, there is also a further relevant contrast between the two. Whereas experimenters are able to manipulate those known influences and initial conditions which they have the technical ability to control, researchers relying upon spontaneous regularities have to take the combinations which chance provides them with. These may not be negligible; after all, many of the early, striking advances of modern science were based upon the spontaneously occurring regularities of astronomical phenomena. Nevertheless, it cannot be denied that reliance upon spontaneously occurring regularities limits the information about regularities available for researchers to use in theory testing.

However, there is a further source of information available. Social scientists cannot practically intervene in situations to produce regularities that may indicate a structure at work. What they can do is to use quantitative techniques of analysis to extract patterns of connection from events that are not regular in character. The notion of patterns of connection needs some explanation here. Much realist discussion focuses only on *regularities of events* in which one event is constantly conjoined with another. There is, however, another kind of regularity that is not displayed in a constant conjunction of events but nevertheless can be analytically extracted from events. As we have seen, realists argue that events are often produced by multiple structural influences. Quantitative and statistical techniques may be used to reveal patterns in such events that are obscured by the range of influences operating upon them. If some of these structures are already known, their influence on events can be analytically controlled for to reveal whether there is a further pattern connecting two factors, suggesting that one may be influenced by the other. Likewise, statistical techniques can sometimes be used to extract revealing patterns in data even when the precise parameters of the various influences are not known prior to analysis. The kind of regularity displayed by such analysis is a pattern of connection and can be identified even if there is no regularity at the level of events. The existence of such a pattern suggests that there may be a structural influence at work, a claim that can be investigated further to examine its plausibility.

As an example, let us consider an investigation that explored whether the class background of an individual and/or the type of school that they attended (e.g. state non-selective vs. state selective or independent) had an influence on the

years that s/he stayed at school beyond the minimum leaving age. This was a sub-issue in a wide-ranging study of social stratification produced by Alexander Stewart, Kenneth Prandy and Robert Blackburn (1980). In this case, events did not have the straightforward regularity that would have occurred if length of stay at school was determined by one influence only (i.e. if length of stay was determined only by one influence or the other).

However, this did not mean that further investigation could not take place. Stewart et al. used analysis of variance techniques to discover strong patterned relationships between the years an individual stayed at school and both his/her class background and the type of school attended (Stewart et al., 1980, pp. 218–9). They also noted that these patterns were not independent of each other, suggesting that the two kinds of influence in some way interacted. Further investigation teased this out, discovering a pattern such that years at school were more strongly linked with class background when students were attending higher status schools (state selective or independent) than when they were attending lower status schools. Stewart et al. thus used statistical techniques to reveal patterns that could be associated with causal influences, and that were not apparent as straightforward regularities of events because more than one influence was involved.

Of course, the validity of using quantitative measures and statistical techniques to investigate the social world has frequently been questioned by social thinkers, including realists such as Sayer (1992). The most important (and oft-repeated) point is that the production of statistical regularities such as correlations cannot be taken as a demonstration of causation. As writers like Sayer (1992, pp. 19–3) point out, further investigation is required in order to establish whether there is a relevant causal link, as correlations may be misleading, being generated by chance or by some further, unidentified factors. While this point is valid, the situation is not necessarily different in the natural sciences. Many natural scientific investigations involve searches for patterns in data that suggest that a causal link exists but do not demonstrate such a link, in the sense of identifying the causal mechanism that produces the effect. For example, the work of Newton and his predecessors in identifying patterns in the behaviour of astronomical objects was crucial to the development of his theory of universal gravitation, even though these patterns could be said to only indicate “correlation” rather than “causation” (indeed the same is true of Newton’s theory itself, which did not demonstrate the causal mechanism at work in producing gravity). The discovery of patterns in data has frequently contributed to the development of natural scientific knowledge and we would argue that the search for and discovery of such patterns in the social world can be equally beneficial to social science. While it is correct to point out that statistically derived regularities cannot, by themselves, establish a causal link, it is also important to acknowledge that the search for such patterns can be an important part of the process of identifying causes operating in the social world.

It should be noted that our defence of statistical and quantitative techniques here is not a defence of the validity of every specific approach. There are many interesting debates and criticisms around particular measures, such as Christopher Achen's case against the use of the  $r^2$  value to measure the "goodness of fit" of a regression analysis (Achen, 1982). However, even a writer such as Achen is not undifferentiated in his criticism of statistical approaches, and his later volume, *The Statistical Analysis of Quasi-Experiments* (1986), explores techniques for finding significant patterns in data that are not generated in experimental circumstances.<sup>20</sup> All that our argument here requires is that there are some valid statistical/quantitative techniques for manipulating data to reveal patterns that might otherwise have been obscured by the contribution of multiple structures to the social events that occur.<sup>21</sup>

Of course, forms of statistical and quantitative analysis do not provide the social scientific researchers with precisely the same capacities as experimental researchers. This is because experimenters can (often) manipulate initial conditions, whereas this manipulation is not possible in the social world. However, once the initial conditions are set, it may well be possible for social scientists to extract regularities from the data using analytical techniques and statistical reasoning which can control for known influences. We can say, then, that a pattern of connection is a regular conjunction of two factors where this does not result in a regular conjunction of events. Because of the relevance of such patterns to investigation, the notion of regularities should be expanded to include both regularities of events and patterns of connection.

This defence of the search for regularities may make those with realist sympathies rather uncomfortable. After all, isn't it an essential tenet of realist arguments that science isn't about the identification of regularities but the search for structures? We would suggest that this is misleadingly put. On the one hand, realism does argue that laws should not be conceived of as referring to constant conjunctions of events, instead relating to the powers of structures (Bhaskar, 1997 [1975]). On the other hand, this does not entail that the search for regularities, i.e. regular conjunctions of events and patterns of connection, can be dispensed with by scientific investigation. As we saw above, one of the key tasks of experiment in the natural sciences is precisely to produce a regular conjunction of events. Why is this the case? Because the characteristics and powers of a structure can only be revealed by gauging its regular influence upon events. Experiment is one way of doing this, by attempting to exclude other influences on events apart from the ones under investigation. We argued above that another possibility is for the investigator analytically to manipulate data to extract patterns from it that may reveal the regular influence of a structure. We would thus argue that the search for regularities is consistent with, and necessary for, realist investigation.

Nevertheless, some supporters of realism in social science reject or downplay the search for regularities as a way of identifying structures. Thus, for writers

such as Sayer, it is an “erroneous assumption” to believe “that causation has something to do with regularity” (Sayer, 1992, p. 139). Instead of looking for regularities, Sayer suggests that the ingenuity required in identifying what structures can and cannot do is conceptual, involving qualitative questioning and abstract thinking. What seems peculiar in Sayer’s approach is that regularities are allowed to play little or no role in investigation. On the one hand, an absence of the regularities that might be expected on the basis of the claimed structure and its mechanism are argued not to call into question that structure. On the other hand, the existence of regularities plays no part in the process of identifying mechanisms.

In fact, there is an argument from within realism that does suggest that within the social sciences, causation may indeed have something to do with regularity. As we have seen, though social structures are conceptualised in terms of unintended consequences of action, those consequences depend upon intentional action. Since intentional action is integral to the events that social scientists seek to explain, it seems that social structures can be distinguished from natural structures. Thus, Bhaskar writes, “social structures, unlike natural structures cannot exist independently of their effects” (Bhaskar, 1975, p. 246). If this is so, whereas empirical regularities would not give direct access to natural structures, they would give access to social structures. Moreover, this would seem to be a plausible interpretation of Lawson’s category of “demi-regs”. Social structures are relatively stable in time and place, but lack the universality of natural structures precisely because they are maintained in action.<sup>22</sup>

We have considered some of the difficulties with Sayer’s qualitative approach above. What needs to be emphasised here is the way in which it inverts the mode of investigation required in order for science to progress. We would argue that the search for regularities should drive the development and, particularly, testing of structural theories. As in natural science, the existence of a regularity provides a stimulus to the search for the structure that may be generating it. More fundamentally, the failure of a structural theory to account for the regular effects that are detected in appropriate circumstances,<sup>23</sup> provides grounds for reconstructing the theory in order better to account for that situation and others. Whilst causation is not identical with regularity, it is only by finding or producing regularities that the causal powers of structures can be identified.

The problem with Sayer’s approach is its suggestion that the search for regularities should be subordinate to qualitative investigation that identifies the real properties of structures. The result of this approach is that regularities can be ruled out as irrelevant on the grounds that they do not fit with already existing conceptualisations of structure. We considered an example of this above: Sayer’s analysis of the relations between capitalism and patriarchy. As we saw, Sayer suggests that although patriarchy is everywhere regularly associated with capitalism, this does not mean that it was necessary to its operation. The necessity of the relation can only be established conceptually, and because capitalism can be

conceived of as gender-blind, this suggests that the relation is contingent (Sayer, 2000b, pp. 713–5; Sayer, 1992).

Sayer is correct to argue that the existence of a regularity is not proof of a connection. Nevertheless, it is an indicator that there may be a connection, and one that should stimulate investigation. Furthermore, the question of connection cannot be settled by calling only on an untested conceptualisation of structure. Rather our “conceptualisations” of structures must be tested by finding situations in which the properties of the structural influence in question are apparent in spontaneously occurring or analytically derived regularities.<sup>24</sup> Otherwise, claims about the properties of structures are, at best, speculative, and certainly cannot be used to rule out competing possibilities.

## 5. CONCLUSION

In conclusion, the intention of this article has been to contribute in various ways to the debates within social science around naturalism, experiment and regularity. Firstly, we hope to have clarified aspects of the debate around naturalism, particularly those related to inquiry in open and closed systems. We have suggested that the generic classification of social systems as open is misleading in that it specifies no time-space region to which this claim applies. This distracts inquirers from the possibility that regularities of events can occur spontaneously in social systems, creating temporary closures of the kind effected in experimental activity. Secondly, we have considered a range of surrogates for experiment provided by realist thinkers, suggesting that none of them provides a convincing way of testing structural hypotheses. This is a crucial point, as the difficulty in social science is not the construction of structural accounts but the testing of their validity. Thirdly, we have argued for an expanded conception of regularities, and suggested that information can be produced for theory testing by discovering spontaneous regularities of events, or revealing patterns of connection by analytically extracting them from data, providing information similar in kind to that produced by experimentation. We hope that these arguments will encourage the rigorous testing of hypotheses about structures operating in the social world.

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## NOTES

<sup>1</sup> We use the term “critical realism” (and, in shorthand, “realism”) to refer to the common approach to social science associated with the work of figures such as Roy Bhaskar (1979), Andrew Collier (1994), Margaret Archer (1995) and Andrew Sayer (1992, 2000) (to name but a few). This article does not discuss the rather different line of “realist” work that is associated with Rom Harré (for discussion see Bhaskar, 1990).

<sup>2</sup> Experimental activity is central to Bhaskar’s account of the distinction between “open” and “closed” systems, and the difficulty in establishing “closed” systems in social science, as we shall see, poses a limit on the possibility of naturalism. We have reservations about Bhaskar’s account of experimental closure in natural science, but we shall not pursue them in this article.

<sup>3</sup> It should be noted that while the authors of this article are not uncritical of realism, we are sympathetic to its commitment to social *science*. As such, the intention of this article is to push realist arguments towards a stronger account of the scientific possibilities of social inquiry.

<sup>4</sup> A possible exception here is psychology, although there is some debate surrounding the validity of psychological experiments.

<sup>5</sup> This does not mean that structures cannot exist unacknowledged by actors in the unintended consequences of action, but that there must be some intended actions which are necessary to the reproduction of their unintended consequences.

<sup>6</sup> We have cause to challenge the realist claim that social systems are necessarily open, but for purposes of exposition this has been left until Section 4. To a large degree the idea that the systems dealt with in the social sciences are necessarily open derives from an ontology of “action” in which the possibility that actors “could do otherwise” is intrinsic to the idea of action.

<sup>7</sup> A crucial issue in the social sciences, as we shall see, is the nature of the response to the absence of conditions for the instantiation of a structure. Whereas in the natural sciences the possibility that the claimed structure is false is entertained, the argument frequently arises in the social sciences that the claimed structure is adequate but not relevant in the particular case because actors have chosen different goals, etc, than those represented within the structure.

<sup>8</sup> It should also be noted that the impossibility of producing closed systems in social life entails that there can be no social scientific explanations at all. Without independently validated accounts of structure, it is not possible to produce scientifically validated accounts of the structural influences that produce events.

<sup>9</sup> Indeed, the fact that there are many representations of the world which have the “form” of science—including, for example, astrology—encourages the very “social constructionist” accounts of knowledge(s) as dependent upon members’ agreement that critical realists are concerned to rebut.

<sup>10</sup> Thus Collier’s confidence in scientific socialism seems misplaced. He states: “If someone tells us that high wages have made the workers bourgeois or that capitalists no longer seek profits, we shall be justified in treating these tales with the same scepticism as a natural scientist would treat claims to have made a perpetual motion machine or discovered a case of spontaneous generation” (Collier, 1989, p. 147). Yet even within Marxist class analysis there have been those who have sought a “structural” explanation of high wages, modifying class categories accordingly, even introducing the idea of “contradictory class locations” which involve a “bourgeois” element in the determination of wages (Wright, 1985; 1997). Others (Goldthorpe and Marshall, 1992) have argued that these modifications in class categories move the analysis in the direction of Weberian accounts which quite specifically offer a non-socialist structural account. These modifications may be open to criticism, of course, but they hardly stretch credulity in the way Collier suggests, and it is not clear what grounds he would offer for preferring his claims (and that socialism depends upon their veracity).

<sup>11</sup> Reference here to “qualitative” analysis has to be distinguished from what are conventionally regarded as qualitative research methods as distinct from quantitative methods. Sayer is referring to a way of conceiving of social science, rather than the forms of data collection and analysis that might be used in support of it.

<sup>12</sup> Sayer is echoing Marx’s methodological statement regarding the abstract and the concrete, put forward in the *Grundrisse* (1973 [1939], p. 100).

<sup>13</sup> In his response, Sayer suggests that this criticism misrepresents critical realism, which does see necessity as a property of structures and their operation (Sayer, 2001, pp. 969–971). However, this response rather misses the point; Sayer’s conceptual approach ends up attributing necessity on logical rather than empirical grounds, contravening his realist principles.

<sup>14</sup> It might be that social scientific research has some way of identifying structures not available to the natural sciences, such as knowledge provided by the interpretation of actors’ understandings. Sayer’s reference to a “qualitative” analysis as the means of identifying structures cues this possibility. We shall consider whether the latter can be defended from a realist perspective in the next sub-section.

<sup>15</sup> A similar argument is found in Lukes (1974, p. 47) in his attempt to identify “abnormal times” which would reveal the underlying structures of power and actors’ “true interests” that reside in a “third dimension” outside the false consciousness of actors during “normal times”.

<sup>16</sup> The argument also applies to a set of mechanisms so long as they are theorised as necessarily operating together, and their action has a determinate causal outcome.

<sup>17</sup> It seems particularly odd for Collier to defend this notion of crisis, given that elsewhere he has defended the Althusserian idea that “the concrete situation is always a *conjuncture*, i.e. a joint effect of several interacting processes” (Collier, 1989, p. 67). From Althusser’s perspective, “the lonely hour of the last instance never comes”, and any crisis must be assumed to be multiply determined (Althusser, 1977, p. 113).

<sup>18</sup> Additionally, experiment could only approach closure rather than achieve it, since closure depends upon knowledge of other structures which may influence events in order

to control for them, but scientific research is part of a process of transforming knowledge and producing new knowledge, so that the structures that need to be controlled for cannot be fully known in advance of experimentation.

<sup>19</sup> If crises had the form that Collier suggests, they would result in a demi-regularity.

<sup>20</sup> If inquiry is a dynamic undertaking, we should expect this to be manifest not just in terms of the transformation of explanations by the identification of new structures and the reformulation of structures previously thought to operate, but also in methods of inquiry and techniques of analysis. Specific statistical techniques may reveal limitations, but those limitations usually do not render a technique nugatory. An appreciation of limitations is not only a condition of their appropriate usage, but also the occasion for the search for new techniques without those limitations. The invention of new and better techniques could hardly take place except in relation to problems of usage.

<sup>21</sup> Problems with statistical reasoning can sometimes appear magnified by critiques directed at naïve uses of such approaches. In one such example, Sayer considers a statistical study of crime rates which identifies different mean crime rates in different types of areas (e.g. inner cities, suburbs and rural areas). Sayer rightly suggests that there is something explanatorily dubious about the inference that the difference in type of area straightforwardly *explains* the variation in crime rates (Sayer, 1992, p. 194). Nevertheless, the defender of statistics need not make this inference, but can use the revealed pattern to contribute to the development of other explanations, explanations that are stimulated by the statistical work in question, and face up to the challenge of accounting for the pattern generated by such work.

<sup>22</sup> This raises further problems. It is frequently argued, for example, that because social structures are maintained in action, the absence of effects can be attributed to the capacity of actors to act differently. This idea is found in Weber's account of ideal types, where he makes a contrast between natural science and social science on just this point. He writes, "an hypothetical 'law of nature' which is definitively refuted in a *single* case collapses as an hypothesis once and for all. In contrast, the ideal typical constructions of economics—if they are correctly understood—have no pretensions at all to *general* validity (Weber, 1975, p. 190). Furthermore, in social inquiry, theoretical constructs, "can function as hypotheses when employed for heuristic purposes. However, in contrast to hypotheses in the natural sciences to establish in a concrete case that an interpretation is *not* valid is irrelevant to the question of the theoretical value of the interpretive scheme" (Weber, 1975, p. 190). Obviously, we are taking issue with the representation of theoretical constructs as ideal types in this way. Realists are somewhat ambivalent. They do not accept Weber's view of ideal types as "fictions", since they believe social structures to be "real", yet Sayer, for example, finds that ideal type analysis is similar to his qualitative approach (Sayer, 2000b).

<sup>23</sup> That is, situations where other factors are spontaneously or analytically controlled.

<sup>24</sup> For example, we might regard Marx to have offered an account of capitalist development with which there were plausible associated "demi-regularities" at the time he was writing. Thus, as Erik Wright has commented with regard to Marx's "abstract" account of polar classes, Marx believed that, "the real movement of capitalist development would thus produce an effective correspondence between the abstract and concrete categories of class analysis." (1985, p. 8). However, Wright concedes that, in Lawson's terms, there are now no demi-regularities associated with Marx's "abstract" class theory, writing that, "given it is no longer generally accepted that the class structure within capitalism is increasingly polarized, it has become more difficult to side-step the theoretical problem of the gap between the abstract polarized concept of class relations and the complex concrete patterns of class formation and class struggle. It is no longer assumed that history will gradually eliminate the conceptual problem." (1985, p. 9). Surely, the problem may

be answered by the reconstruction of the polarized class categories, rather than their *abstraction* (indeed, their *abstraction* appears to be a response to the absence of associated (demi-)regularities). “Realism” inclines Wright to recommend their status as expressive of a “deeper” structure, albeit one that is not expected to be actualised. Apparently, they were once actualised as “demi-regularities” and now they are no longer expected to be actualised.

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