1. Social mechanisms: An introductory essay

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Introduction

The main message of this book is that the advancement of social theory calls for an analytical approach that systematically seeks to explicate the social mechanisms that generate and explain observed associations between events. It might appear obvious that every social theory, worthy of its name, should be explanatory. But upon closer examination, it turns out that what often goes under the rubric of social theory, should more properly be viewed as conceptual or sensitizing schemes, and not as explanatory theory proper.[1] Much of modern social theory has a tendency – just like the Parsonianism of yesterday – to label, relabel, and to describe rather than to explain.[2] In the case of sociological theory, our main concern in this essay, a sustained focus on explanatory social mechanisms would allow sociological theory to reconnect with what we consider to be its most promising and productive era – namely, middle-range sociology of the kind that Robert Merton and Paul Lazarsfeld tried to develop at Columbia University after World War II.[3]

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[1] In an insightful article by someone who has devoted most of his academic career to general social theory, Göran Therborn (1991:178) notes: ''Absent in or marginal to currently prevailing general sociological theorizing is any ambition to explain.'' See also Jeffrey Alexander's plea in the *Handbook of Sociology* that more attention should be given to ''discourse'' and less to ''explanation'' (Alexander 1988:78–81).

[2] That Parsons had a similar problem to explain, rather than to describe and relabel, is clear. See, for example, George Homans's statement from the early 1960s, with explicit address to Parsons, Shils, and Smelser, that ''much modern sociological theory seems to me to possess every virtue except that of explaining anything'' (Homans 1961:7).

[3] The two best introductions to middle-range sociology are, in our opinion, Robert Mer-

The mechanisms-based approach to social theory should not be confused with a purely descriptive approach that seeks to account for the unique chain of events that lead from one situation or event to another. All proper explanations explain the particular by the general, and as will be demonstrated later, there are general types of mechanisms, found in a range of different social settings, that operate according to the same logical principles. Our vision of an explanatory sociology contains an ensemble of such fundamental mechanisms that can be used for explanatory purposes in a wide range of social situations.

In this chapter, we will describe how the concept of mechanism has been used in the social sciences, especially sociology. We will discuss the explanatory status and importance of social mechanisms, the characteristics of analytical sociology, and the relationship between variable-based and mechanism-based approaches. Thereafter we will illustrate our notion of a general social mechanism with reference to the work of Robert Merton, James Coleman, and Mark Granovetter. The essay ends with a typology of such social mechanisms and a brief guide to the other chapters of the book.

On the use of the concept of mechanisms in the social sciences

An interesting aspect of the mechanism approach is its interdisciplinarity. As an example of this, we refer to contemporary biology.[4] According to

ton's essay ''On Sociological Theories of the Middle Range'' and Raymond Boudon's short article ''What Middle-Range Theories Are'' (Merton 1967; Boudon 1991).

[4] In modern physics, the term ''mechanism'' is not used, but many of the explanations are mechanism based. The reason for not using the term itself is of a historical or accidental nature and has to do with the fact that in physics the word ''mechanism'' is connected to the scientific world view of the 17th century (e.g., Dijksterhuis 1986). It should also be remembered that in the 19th century, thermodynamics popularized the notion of a system, which is broader than that of ''mechanism/machine'' and allows the analyst to choose the environment of the system according to the purpose of the study. The attempt to conceptualize all phenomena according to the elementary laws of mechanics became impossible after the emergence of field physics in the middle of the 19th century. The 17th-century notion of mechanism spread from physics and astronomy to a number of sciences – such as chemistry and biology – where the term ''mechanism'' is still used, though with different meanings. The Cartesian notion that organisms can be conceptualized as machines turned out to be very useful, and it became central to a new biological philosophy called ''mechanism,'' which is usually contrasted to that of ''vitalism'' or the doctrine that life cannot be reduced to mechanics (e.g., Beckner 1967). In the 19th century, the term ''mechanism'' was

Francis Crick, who shared the Nobel Prize in 1962 for his discovery of the molecular structure of DNA, 20th century biologists prefer to think in terms of ''mechanisms'' and not ''laws.'' The reason for this is that the notion of ''laws'' is generally reserved for physics, which is the only science that can produce explanations based upon powerful and often counterintuitive laws with no significant exceptions. ''What is found in biology is *mechanisms*, mechanisms built with chemical components and that are often modified by other, later, mechanisms added to the earlier ones'' (Crick 1989:138).

In the social sciences, the prevalence of explicitly stated mechanism-based explanations vary widely between the disciplines. These types of explanations are rarely used (explicitly) in history, sometimes in sociology, and quite frequently in economics and psychology. Particularly in cognitive psychology, the notion of mechanism plays a key role. To cite a well-known work, ''The information-processing approach [in cognitive psychology] assumes that perception and learning can be analyzed into a series of stages during which particular components ('mechanisms') perform certain transformations or recoding of the information coming into them'' (Bower 1975:33).

Economists often see themselves as thinking in terms of mechanisms, as opposed to sociologists and historians, who are believed to be more interested in social institutions. Schumpeter, for example, writes that ''by economics – or, if you prefer, 'economics proper' – we denote the interpretive description of economic mechanisms that play within any given state of those institutions [studied by economic sociology], such as market mechanisms'' (Schumpeter 1989:293). The one mechanism that economists relate most of their analyses to – their master mechanism, so to speak – is the market. That the market can be seen as a ''mechanism'' goes back to the 18th century, when economics (via, e.g., Adam Smith) became influenced by the Newtonian–Cartesian worldview, and it has become so self-evident to contemporary economists that the market is a mechanism, that they often use the terms ''market'' and ''market mechanism'' synonymously.

Much of neoclassical economics in the 20th century can be understood as an attempt to explain ever more aspects of the economic process

disconnected from the metaphor of the machine and instead became linked to that of the system.

through the mechanism of the market: production as well as consumption and distribution. The notion of mechanism is furthermore implicit in the idea of equilibrium, as Tyler Cowen points out in his survey of the use of mechanisms in economics (Chapter 6). It is worth noting that economists' talents for thinking in terms of mechanisms often only becomes clear to non-economists when they go beyond the traditional boundaries of their discipline. Examples of this can be found in Albert Hirschman's *Exit, Voice, and Loyalty* (1970) and even more so in Thomas Schelling's *Micromotives and Macrobehavior* (1978).[5]

As economists gradually have expanded the boundaries of their discipline to include a range of topics traditionally considered the domain of sociologists, such as the family and organizations, the difference between the disciplines to an increasing extent have come to concern the types of theories being used. One such difference, but by no means the only one, centers exactly on the importance attributed to explanatory mechanisms. Comparing labor market sociology with labor economics, Aage Sørensen (1990) has noted that most labor market sociologists think of theory

> as having to do with which variables should be included in the equations and how these variables relate to other variables – and not as something which is about which mechanisms produce the observed associations in the variables. This is where there is a huge difference between sociological research and economic research in this area; and the difference is very much to the disadvantage of the sociologist. (308)

The use of mechanisms in sociology

Sociology, as we noted earlier, lags behind economics and many other sciences when it comes to explicitly formulated mechanism-based theories. The term ''mechanism'' is quite common in sociological works and has a long history, but it is nearly always used in a casual everyday sense. As an illustration of this tendency, we cite what is in all likelihood its earliest

[5] The problem that Hirschman addresses has to do with what happens when an organization (including a firm) begins to decline. According to Hirschman, two ''mechanisms of recuperation'' are usually triggered off in this situation, one that is discussed primarily in economics (''exit'') and one that is focused on primarily by political scientists (''voice''). Schelling's *Micromotives and Macrobehavior* is the classic in the area of social mechanisms. The essay on segregation (''Sorting and Mixing: Race and Sex'') is the most famous, but we also would like to draw attention to Schelling's attempt to produce a catalogue of social mechanisms in ''Thermostats, Lemons, and Other Families of Models.''

use in sociology. In 1905 Albion Small published a textbook in sociological theory, *General Sociology*, in which he had included a list of the most important sociological concepts. Among Small's examples were ''society,'' ''social structure,'' ''social status,'' and ''social mechanism'' (Small 1905:401–2). Nowhere in the text of his work, however, does Small explicate the concept of social mechanism in a serious manner.

Small's concept of a social mechanism is, as in today's sociology, used in a casual everydayish way. Robert Merton's term for this type of use is ''proto-concept,'' and he explains its meaning in the following manner: ''a proto-concept is an early, rudimentary, particularized, and largely unexplicated idea . . . ; a concept [on the other hand] is a general idea which once having been defined, tagged, substantially generalized, and explicated can effectively guide inquiry into seemingly diverse phenomena'' (Merton 1984:267).

Among the sociological classics, the term ''mechanism'' is rarely used, even if the idea itself is present.[6] Among the best-known examples is the mechanism that *The Protestant Ethic* is centered around, more precisely the way that ascetic Protestantism at one point in history led to changes in people's economic behavior. Thanks to a believer's conversion to ascetic Protestantism, to recapitulate Weber's argument, he or she began to set a religious premium on a certain type of behavior, the unintended consequence of which was a novel norm for how to act in economic questions.[7] The works of Simmel and Durkheim similarly contain a number of important mechanisms. Simmel's use of *tertius gaudens* is one example of this, as is Durkheim's analysis of the way that the balance between individual and group affects the suicide rate.

An explicit use of the concept of ''mechanism'' does not seem to have emerged in sociology until after World War II. In our opinion the most suggestive discussion of the concept is to be found in the writings of Robert Merton, who brought together the idea of mechanism with that of

[6] Weber, for example, rarely used the term ''mechanism'' (''Mechanismus'') except in his analysis of bureaucracy, where it is more or less synonymous with ''machine'' (Weber [1921–2] 1978:961, 967, 988; Weber as cited in Marianne Weber 1975:416–17). In *Zwischenbetrachtung*, Weber makes the following statement, which sums up the situation brought about by Descartes and Newton: ''The tension between religion and intellectual knowledge definitely comes to the fore wherever rational, empirical knowledge has consistently worked through to the disenchantment of the world and its transformation into a causal mechanism [*kausalen Mechanismus*]'' (Weber 1946:350; emphasis added).

[7] For a discussion of this and many other mechanisms in Weber's work, see Richard

middle-range theorizing (Merton 1967).[8] Merton firmly rejected all attempts to develop general systems of sociological theory and advocated instead that sociological theory should deal with ''social mechanisms.'' The point is to locate a middle ground between social laws and description, Merton said, and ''mechanisms'' constitute such a middle ground.

In *Social Theory and Social Structure*, Merton defines social mechanisms as ''social processes having designated consequences for designated parts of the social structure'' and argues that it constitutes the main task of sociology to ''identify'' mechanisms and to establish under which conditions they ''come into being,'' ''fail to operate,'' and so on (Merton 1968:43–44). Merton briefly discusses concrete mechanisms that determine reference groups, create dissonance, and articulate role-sets.[9] In our opinion the most important contribution of his essay, however, is the view of mechanisms as elementary building blocks of middle-range theories.

After the demise of the Columbia School, there has been little serious discussion in sociology of mechanism-based theorizing. There exists only one exception, as far as we know, when it comes to a general meta-theoretical discussion within sociology, and that is a recent article by Arthur Stinchcombe: ''The Conditions of Fruitfulness of Theorizing about Mechanisms in Social Science'' (1991, revised version 1993). In this article, Stinchcombe correctly observes that ''we do not have a sufficiently supple armory of mechanisms for making social science theory'' (Stinchcombe 1993:24). He defined the concept of mechanism in the following way:

> Mechanisms in a theory are defined here as bits of theory about entities at a different level (e.g., individuals) than the main entities being the-

Swedberg, *Max Weber and the Idea of Economic Sociology* (forthcoming, Princeton University Press).

[8] Merton's work on middle-range theory goes back to his critique of Parsons at the 1947 meeting of the American Sociological Association (see Merton, 1948). Also, Parsons discussed the concept of mechanism, especially in his work from the early 1950s (see, e.g., Parsons 1951:201–325, Parsons and Shils 1951:125–49). Parsons's view, however, was marred by his functionalism as well as by his attempts at grand theory, and the function of social mechanisms was basically reduced to that of maintaining the social system when this was threatened in some manner. As Lars Udehn has pointed out to us, George Lundberg also uses the concept of social mechanisms in *Foundations of Sociology* (1939). Lundberg argued for a common-sense approach to the notion of mechanism, often with functionalist overtones.

[9] To this can be added a few other more general mechanisms that were to emerge from Merton's own work as well as from Columbia Sociology in general: the two-step model of communication, the self-fulfilling prophecy, the Matthew Effect, and the diffusion mechanism of *Medical Innovation* (Coleman, Katz, and Menzel 1966).

> orized about (e.g., groups), which serve to make the higher-level theory more supple, more accurate, or more general. (Stinchcombe 1991:367)

The examples that Stinchcombe uses to illustrate his definition include maximizing individuals (on the lower level) who create a market through their actions (on the higher level) and molecules (on the lower level) that under certain conditions turn into gas (on the higher level).

What Stinchcombe is talking about are indeed important types of mechanisms, but there also exist other types of mechanisms, as we will suggest below. A much broader, as well as more differentiated, concept can be found in the work of Jon Elster, who has clearly done more than anybody else to advance mechanism-based theorizing in the 1980s and 1990s.[10]

The explanatory importance of social mechanisms

The core argument of this chapter is that the identification and analysis of social mechanisms is of crucial importance for the progress of social science theory and research. But what exactly is a mechanism, and why should we focus on mechanisms rather than on statistical associations or other forms of relationships between the entities of interest?

It is far from trivial to provide a precise yet sufficiently general definition of a social mechanism that captures the essence of the concept. As suggested by Harré (1970), one key defining characteristic of an explanatory mechanism is the function it performs in an explanatory account. Assume that we have observed a systematic relationship between two entities, say I and O. In order to explain the relationship between them we search for a mechanism, M, which is such that on the occurrence of the cause or input, I, it generates the effect or outcome, O. The search for mechanisms means that we are not satisfied with merely establishing systematic covariation between variables or events; a satisfactory explanation requires that we are also able to specify the social ''cogs and wheels'' (Elster 1989:3) that have brought the relationship into existence. As Schelling emphasizes in Chapter 2, a mechanism can be seen as a systematic set of statements that provide a plausible account of how I and O are linked to one another.

[10] Many of Elster's ideas are distinctly summarized in the chapter entitled ''Mechanisms'' in *Nuts and Bolts for the Social Sciences* (1989:3–10), but the reader is also referred to the more detailed discussion in many other works (see, e.g., Elster 1989, 1991, 1992, 1993).

This view of causal explanations differs in important respects from the classic covering-law model as advocated by Carl Hempel and his followers (see Hempel 1942, 1962). According to Hempel, an explanation of an event entails subsuming the event under a general law. A satisfactory explanation therefore must specify the general covering law and the conditions that make the law applicable in the specific case.[11] According to Hempel, deterministic laws are quite unlikely in the social and the historical sciences. The ''laws'' that can be invoked in the social sciences are instead of a probabilistic nature (i.e., they state that the occurrence of a particular event will come about with such and such probability if certain specified conditions are at hand).

Since this form of explanation simply entails applying a general law to a specific situation, the insights offered by the exercise are directly proportional to the depth and robustness of the ''probabilistic law.'' If this law is only a statistical association, which is the norm in the social and historical sciences according to Hempel, the specific explanation will offer no more insights than the law itself and will usually only suggest *that* a relationship is likely to exist, but it will give no clue as to *why* this is likely to be the case. For these reasons, we are inclined to agree with von Wright's position that it is better ''not to say that the inductive-probabilistic model [of Hempel] explains what happens, but to say only that it justifies certain expectations and predictions'' (von Wright 1971: 14).

The covering-law model provides justification for the use of ''black-box'' explanations in the social sciences because it does not stipulate that the mechanism linking *explanans* and *explanandum* must be specified in order for an acceptable explanation to be at hand. This omission has given leeway for sloppy scholarship, and a major advantage of the mechanism-based approach is that it provides (or encourages) deeper, more direct, and more fine-grained explanations. The search for generative mechanisms consequently helps us distinguish between genuine causality and coinci-

[11] Hempel (1942) uses the example of an automobile radiator cracking during a cold night to illustrate the logic of his proposal. The general laws cited in the explanation would need to refer to how the pressure of water changes with changes in temperature and volume, and the specific circumstances referred to would be conditions such as the temperature during the night and the bursting pressure of the radiator. A proper explanation has been proposed if, and only if, the proposition about cracking of the radiator can be logically deduced from the sentences stating the laws and the specific circumstances.

dental association, and it increases the understanding of why we observe what we observe.

The role that the search for mechanisms plays in distinguishing between spurious and real associations can be illustrated by the recent controversy surrounding possible health effects of electromagnetic fields. Some epidemiological studies have found an empirical association between exposure to electromagnetic fields and childhood leukemia (see Feychting and Ahlbom 1993). However, the weight of these empirical results are severely reduced by the fact that there exists no known biological mechanism that can explain how low-frequency magnetic fields could possibly induce cancer (ORAU 1992). According to Bennett (1994), it is furthermore extremely unlikely that a mechanism will ever be found, because such a mechanism would have to violate well-established physical principles. The lack of a plausible mechanism increases the likelihood that the weak and rather unsystematic empirical evidence reported in this epidemiological literature, simply reflects unmeasured confounding factors rather than a genuine causal relationship (Hedström 1994a).

The distinction between black-box explanations and mechanism-based explanations can be illustrated in more general terms with the following example, which is adopted from the work of Bunge (1967). Assume that we have observed a systematic (nonrandom) relationship between two types of events or variables, I and O. The way in which the two sets of events or variables are linked to one another is expressed with the mechanism, M:

What characterizes a black-box explanation is that the link between input and output, or between *explanans* and *explanandum*, is assumed to be devoid of structure, or, at least, whatever structure there may be is considered to be of no inherent interest (perhaps because it cannot be observed or because O can be predicted even though the mechanisms linking I and O are unknown).

In sociology the most systematized form of black-box explanation can be found in the so-called causal modeling approach (see Duncan 1975), which will be discussed more fully later. In the causal-modeling tradition, the explanatory ''mechanism'' simply is a regression coefficient linking I and O, and this regression coefficient (if the model includes all relevant

variables) is supposed to describe the causal influence of *I* upon *O*. The approach advocated here does not rest with describing the strength and the form of the relationship between the entities of interest but addresses a further and deeper problem: how (i.e., through what process) was the relationship brought about?[12]

Consider the example of poisoning. It would be possible to estimate the parameters of an equation describing the relationship between the intake of, say, strychnine and the risk of dying. If the model had the correct functional form, we might even have established a ''covering law'' of the dose-response relationship, which could be used for predicting the likely outcomes of other occurrences of strychnine intake. But as long as we have not specified the mechanisms that link strychnine intake to morbidity and mortality, the explanation is clearly wanting. By pointing to how strychnine inhibits the respiratory centers of the brain and to the biochemical processes responsible for this paralysis, we provide a mechanism that allows us not only to describe what is likely to happen but also to explain why it is likely to happen (see Bunge 1967).

It is important to note that the mechanisms referred to in the foregoing discussion are mechanisms of some generality, and it is this generality that gives them their explanatory power. Simply making up an ad hoc story tailored to a specific case does not constitute an acceptable explanation. Even moderately talented journalists are able to make up these sorts of ad hoc stories, and, as Arthur Stinchcombe once noted, ''a student [of sociology] who has difficulty thinking of at least three sensible explanations for any correlation that he is really interested in should probably choose another profession'' (Stinchcombe 1968:13). Serious, noncommonsensical explanations require mechanisms of some generality.

One line of sociological research that illustrates the shortcomings of black-box explanations is research on class and its individual correlates. In empirically oriented sociology, individuals' class belonging has become a popular explanation for various individual-level phenomena such as income (e.g., Kalleberg and Berg 1987) and health (e.g., Townsend and

[12] It should be emphasized that the distinction between ''black boxes'' and ''mechanisms'' to some extent is time-bound. In the words of Patrick Suppes (1970:91): ''From the standpoint of either scientific investigation or philosophical analysis it can fairly be said that one man's mechanism is another man's black box. I mean by this that the mechanisms postulated and used by one generation are mechanisms that are to be explained and understood themselves in terms of more primitive mechanisms by the next generation.''