Causal Mechanism and Explanation in Social Science

Renate Mayntz
Abstract

In the social sciences, the development of a specific social event or structure is often explained by a statistical correlation between an independent variable and a variable assumed to be dependent upon it. This mode of explanation is contested by a methodology of causal reconstruction that operates with the concept of mechanisms. A mechanism is a process in which a set of linked steps leads from initial conditions to an outcome or effect. Mechanisms are general concepts, subjecting individual cases to a general category. Except for the literature dealing specifically with the concept, the term “mechanism” is often used without definition of its substantive content; there is no agreement with respect to the unique or plural character of the initial conditions, nor to the structure of the causal path leading to a specific outcome. Nevertheless, mechanisms have played a crucial role in detailed causal analysis of complex historical events, such as the financial crisis of 2008 and German unification of 1989.

Keywords: causal reconstruction, finance crisis, German unification, mechanism

Zusammenfassung


Schlagwörter: deutsche Vereinigung, Finanzkrise, kausale Rekonstruktion, Mechanismen
Contents

1  The concept of mechanism 1
2  The substantive content of “mechanism” 3
3  Mechanisms and historical events 5
References 7
Causal Mechanism and Explanation in Social Science

1 The concept of mechanism

The concept of mechanism is frequently used in the social sciences. In a conference devoted to “Causal Mechanisms in the Analysis of Social Policy Dynamics” in Bremen in November 2019, the concept became the target of attention. As Hedström and Swedberg (1996) observed, the concept “mechanism” can be traced back to seventeenth-century realist philosophy. The interest of realist philosophy in scientific experimentation has led to what we now call natural sciences. The concept of mechanism is tied to Newtonian mechanics, and hence to coupled systems with tight links between their parts. In the social sciences, the concept has been part of its basic methodological issue, the nomothetic or idiographic nature of its statements. Historically, the social sciences have attempted to dissociate themselves from history and to claim their scientific nature by resembling the lawful quality of the natural sciences. Today, the methodological claim that our general statements may possess the quality of “universal” social laws is no longer shared, a view not limited to those parts of the social sciences that deal emphatically with historical events. Talking about empirical regularities, we may instead speak of Robert K. Merton’s “theories of the middle range” or of social mechanisms, two concepts that delimit the sphere of possible theoretical generalization.

In the social sciences, and especially in political science, the word “mechanism” is frequently used without definition of its substantive content, the steps in a process. I discussed the issue of mechanisms in 2002 and 2004; having convinced myself that the concept of mechanism is theoretically not promising, I tried to refrain from its use. The conference in Bremen challenged me to return to the issue. In the social sciences, the concept of mechanism is identified with an approach that looks for causal explanation. As Jon Elster puts it emphatically in the opening sentence of his 1989 book, “The emphasis in this book is on explanation by mechanisms” (1989, 3). Social processes called mechanisms explain causally the incidence of given explananda. Mechanisms supplant a mere statistical correlation by a stepwise causal explanation of their empirical linkage. Epistemologically speaking, the concept of social mechanisms is related to scientific (or critical) realism, a school emphasizing causal relationships and the historical variability of social phenomena (Bhaskar 1975; Pawson and Tilley 1997). In a recent article discussing “causal inquiry in International Relations,” Adam Humphreys (2019) contrasts scientific realism, which for him means looking for causal explanation, with empiricism, which for him means correlational analysis. Insisting on causality, the realist approach is directed against the causal interpretation of observed statistical correlations. A correlation, this is the argument, may be a valid description of a statistical link between several empirical elements, but it is not a causal explanation.
There is, however, no absolute contradiction between statistical correlations and a causal explanation. James Mahoney (2016) has shown how the Bayes statistic that works with correlations can be used to reconstruct mechanism interpretations; in mixed-methods research, individual cases are selected from large-N results, and subjected to process tracing (Goertz 2017) to show the causal relations in their genesis. Process tracing, also discussed by Trampusch and Palier (2016), is "a methodology aiming to open up the ‘black box’ of relationships linking dependent and independent variables in a causal chain, a process evolving over time" (Mayntz 2016, 484). Mechanisms are able to do just that. Since “mechanisms” refer to processes rather than structures, mechanisms can be subjected to “process tracing.” This, however, does not answer the question of whether in process tracing, “mechanisms” can be distinguished from other explanatory social processes; what, in other words, defines processes called mechanisms?

The concept of mechanism is often related to a classic article by Machamer, Darden, and Craver (2000), three philosophers who have used chemical transmission and molecular neurobiology to define mechanisms. They suggest, but do not spell out, the use of mechanisms in the social sciences. In the social sciences, mechanisms, if defined at all, have been represented by the formula X → M → Y: a “mechanism” consists of initial conditions and a specific outcome, linked by a sequence of causally related events. Peter Hedström defines social mechanisms as “a constellation of entities or activities that are linked to one another in such a way that they regularly bring about a particular type of outcome” (2005, 11). More recently, Michèle Lamont (quoted in Lamont and Pierson 2019, 16) has recounted her own definition of mechanisms “as a chain of events that […] means to explain what links a certain initial condition (X) to a certain outcome (Y).” Gläser and Laudel (2019) define mechanisms similarly as “a sequence of causally linked events that occur repeatedly in reality if certain conditions are given, and link specified initial conditions to a specific outcome.” The word “repeatedly” must be underlined: mechanisms are general concepts, and if in a given analysis a concrete process is called a mechanism, this means that the specific case is an instance of a proposition that links specific initial conditions causally to a given outcome.

Using this conceptual model in the social sciences is confronted with a special problem. Humphreys (2019) points out, very correctly, that in the social sciences we are confronted with the problem of observability, while in the natural sciences we often deal with “objective” entities you can see and feel, if needed using a technical instrument. In the social sciences we have many directly unobservable entities – specific organizations, states, social classes – though according to Humphreys (ibid., 563), “most scientific realists […] subscribe to both entity realism and causal realism,” neglecting the problem of unobservability. As social scientists we must be careful when we deal with the often precarious relation between our concepts and the reality they point to. What is at stake, Humphreys continues, is a basic question: “To what extent do the presuppositions that underpin mainstream approaches to causal inquiry depart from the practice of natural
“…?” (ibid., 580). This, in fact, is the wider epistemological context of the debate about social mechanisms: they assume the existence of empirical regularities and deny the view that all observed social events are historically unique.

2 The substantive content of “mechanism”

Provided that “social mechanism” is not simply a metaphor, used to copy the prestigious natural sciences and simply equating the term “mechanism” with “processes causing a specific outcome,” what then are its defining features? This question refers to the nature of the elements and their causal linkage in the X -> M -> Y model. The nature of the elements and the type of causal relation implied in the concept is seen differently by different authors. While Elster (1989) speaks of human entities and their activities and interactions as the operating elements in mechanisms, other authors speak of structural features and culture as elements. Independent of the nature of the operating elements, additional questions arise with respect to the initial conditions: Are the initial conditions in a causal process a single factor, or a set of co-existing different factors? As for the connection linking initial conditions to the defining outcome, is the process a strictly patterned sequence of directly related events, or a path of co-existing different processes? Looking at examples of processes called mechanisms illustrates the variety of answers to these questions. I shall illustrate some of them by turning to the financial crisis of the years 2008/2009, an example that also serves to elucidate the applicability of the concept of mechanism in analyzing a complex social event.

The financial crisis has generally been perceived as a “crisis”; in producing it, diverse processes following a special set of causes were combined. In an article I wrote on the crisis, I tried to extricate the connections between the behavior of banks, the behavior of banking clients, and of politics, explaining the crisis as an outcome of different processes operating at the level of populations and different types of organizations (Mayntz 2017). I did not use the concept of mechanism in that paper, but recently an article by Thomas Oatley (2019) made a methodological point of using or not using the concept in the analysis of the financial system. Oatley maintains “that in order to enhance our understanding of global financial interdependence, we need to draw heavily from the complexity sciences as motivated by evolutionary logics, and rely less than we do now on theoretical metaphors drawn from Newtonian mechanics” (ibid., 959). For Oatley, the financial system is a highly complex macro system, an “unpredictable system” in Boulding’s typology, composed of national and transnational banks, investment agencies, regulatory agencies, and various populations of clients, all of them interacting with each other. Oatley is correct in rejecting Newtonian mechanics – and hence mechanisms – as far as he talks about the macro event of the financial crisis of 2008, defined
with all of its particulars. But the concept of mechanism could be applied to some of the processes that led to the crisis; examples would be processes of contagion referring to the behavior of client populations, the diffusion of sales of a specific type of paper by banks, or the response of regulating authorities to liquidity shortages of banks. This suggests a division of explanatory modules: the concept of mechanism may apply to idealized types of specific social processes, but not necessarily to the development of an outcome like the financial crisis of 2008. In defining mechanisms, the cognitive process of abstraction plays a crucial role.

This will become clear if we look at several new publications on social mechanisms. Tulia Falleti and Julia Lynch (2009) published a list of “causal mechanisms” in a more general article. The so-called mechanisms they collect in a large table with proper citations are the following: belief formation, rational choice, brokerage, coordination, framing, power reproduction, positive feedback, layering, conversion, policy drift, increasing returns, and functional consequence. The authors remark that the mechanisms they quote lie at different social levels – the level of populations (e.g., belief formation), of networks (e.g., brokerage), and of functionally differentiated systems (e.g., policy drift); what emerges is a micro (individuals), meso (organizations, institutions), and macro (societies) differentiation. The causal processes appear to differ between levels. At the level of population, a mechanism resembles a collective reaction of similar units to a uniform stimulus; examples would be diffusion, contagion, or mobilization, processes whose ideal X -> M -> Y pattern you can spell out at a high level of generalization. But in the production of macro phenomena or features of social systems, different process models work, as two examples may show.

Rudolf Stichweh (2019), a well-known follower of Luhmann, identifies a list of “generative mechanisms” that underlie the process of globalization, a process that leads to the present World Society – a social entity and his main topic. Stichweh refrains from formulating a macro mechanism of globalization but identifies the generative mechanisms producing it; these are migration, communication, observation, and knowledge. These processes are involved in producing “globalization,” but they differ from the collective reaction of a population to a stimulus, and emphasize interaction. In another article the explanandum is not a specific social entity but a generalized property that social systems may possess: inequality. As in the case of Stichweh, there is no specified single mechanism producing socio-economic inequality, but Lamont and Pierson (2019) identify a list of social mechanisms involved in its generation. The mechanisms are evaluation, legitimation, quantification, commodification, and policy drift. In their article, the authors show how each of these mechanisms functions in producing inequality. You can spell out a chain of steps if you focus on each of the tributary mechanisms, but again they differ from a collective response of a population to a given stimulus.
3  Mechanisms and historical events

Irrespective of their special logic, the processes called mechanisms are also involved in complex historical processes. In a paper by Wolfgang Streeck on the metamorphoses of European social policy, the trajectory of European social policy “has mutated from a projected social-democratic welfare state to a program for competitive adjustment to global markets” (2019, 117). The word “mechanism” never occurs in the article; the historical process Streeck describes is the result of a number of national, European, and global processes, both political and economic, all of them following a different logic. At the level of specification chosen by Streeck, his approach is similar to my analysis of the genesis of the financial crisis, emphasizing the varying combinations of national, European, and transnational processes over time. There is no doubt that in analyzing the process resulting in what we call the financial crisis of 2008, or the changes in European social policy, some of the mechanisms identified for example by Stichweh, by Lamont and Pierson, and by Falleti and Lynch play a role, even though their joint operation, evolving over time, does not fit the definition of mechanism. The identification of mechanisms fits processes involving large populations and interacting networks of organizations better than the generation of unique macro events, caused by the complex interaction of a set of factors that together serve to produce them.

A perfect example is the process of German unification that happened between 1989 and 1991. If you look at the many recently published anniversary analyses, you find a conjunction of highly diverse processes, operating at the same time and leading together to the end result: German unification, as formally ratified by the German parliament. There are the events in the Soviet Union and Russia, the role of Gorbachev, the stand-off attitude of important Western allies, the wave of exits from the GDR via Hungary, the mounting dissatisfaction of the resident GDR population, and the slow work of opposed groups within the GDR aiming at reforms of the socialist system. These domestic, European, and transnational factors do not form one mechanism; there are causal links between individual factors, but there is no sequence of causally connected events that would “explain” German unification. German unification at that particular point in time was contingent: it need not have happened, but it did, due to a specific constellation of different factors operating over time. Roland Czada (2011), who studied the process of German unification, points out that the transformation of earlier socialist into capitalist western democracies is characterized by the contemporaneousness of different political, economic, and social (cultural) changes. Causal explanations of a given outcome or event, produced by the combination of several factors that operate at the same time, but according to different logics, confront us with the well-known dilemma of contemporaneousness, the Gleichzeitigkeit des Ungleichzeitigen. Processes following a historical path combining several roads differ from causal explanations by a chain, a sequence of linked events as we find in processes we may call mechanisms.
The difference in perspective between these two modes of explanation was expressed, unknowingly, in the very first sentence of my book on the transformation of the East German research system in the process of German unification: “Im Rückblick erscheint eine Kette je für sich unerwarteter Ereignisse leicht als zwangläufiger Ablauf” (1994, 15). German unification can be perceived as a forceful change in a political system, and hence as the “outcome” of a mechanism called revolution. If you define revolution as a forceful change in a political system, German unification is just one case in a category, a category including many cases which, looked upon closely, followed from widely different processes. Revolution as a “mechanism,” alongside other mechanisms like policy drift, conversion, or cooperation, refers to a highly general, conceptually construed process. Applied to the case of German unification, the social mechanism of revolution is a mode of viewing reality, not a kind of process.

Many social processes cannot be well understood if whittled down to a mechanism model. Falleti and Lynch (2009) recognize this problem when they argue for the inclusion of “context” factors in the formulation of mechanisms. Their example is “democratization,” generally defined as the choice of political leadership by popular election. As the authors point out, democratization can have different meanings, depending on different procedural rules in defining the electorate and the process of choice. To spell out the varieties of popular election systems depending on their procedural character you need to add elements normally contained in the ceteris paribus clause of a general concept of democratization. Falleti and Lynch thus end up with three different types of democratization. This is simply a step on the way from a more general concept to a variety of different mechanisms of democratization. In formulating mechanisms, the level of generality can change. If coordination is a mechanism, “state” and “market,” as subtypes of coordination, can also be called mechanisms, “state” being construed as centralized hierarchy, and “market” as a system of demand interacting with supply.

Processes called mechanisms are conceptual constructions, a “category of observation and selection,” as Grant (2007, 88) defines it. If we call a social process a mechanism, we refer to an abstract notion of a basic causal relationship involved in its production. Social mechanisms are a specific way of looking at reality – they are an “epistemological instrument without primary empirical correspondence,” as observed by Katerina Strani (2010, 123). Whether they are used as parts of a process leading to a unique outcome like “World Society” as defined by Stichweh, or as part of a combination of factors explaining a historical event like the finance crisis of 2008 or German unification, “mechanisms” re-interpret generative processes in a reality that is conceived as a tightly coupled system. Reference to a given mechanism, identified by a name like “positive feedback” or “revolution,” simply refers to a familiar abstract model. The operation with model explanations may save us the effort of constructing a detailed causal path, which is conceivably the reason why “mechanisms,” words used without further definition, abound in substantive analyses. But that comes at a cost to understanding. To construe a given historical event as a case in a more general, abstract conceptual category means to neglect the details of its explanation. By designating a mechanism by a substantive,
such as revolution, diffusion or cooperation, the causal links between initial conditions and the outcome remain hidden. To speak of mechanisms in this way is a theoretical short-cut; it refers to a complicated process without detailing it.

References


Recent Titles in the Publication Series of the MPIfG

**MPIfG Discussion Papers**

- **DP 20/6**
  - P. Beckmann, B. Fulda, S. Kohl
  - *Housing and Voting in Germany: Multi-Level Evidence for the Association between House Prices and Housing Tenure and Party Outcomes, 1980‒2017*

- **DP 20/5**
  - G. Ferguson-Cradler
  - *Ownership in the Electricity Market: Property, the Firm, and the Climate Crisis*

- **DP 20/4**
  - C. Benassi, N. Durazzi, J. Fortwengel
  - *Not All Firms Are Created Equal: SMEs and Vocational Training in the UK, Italy, and Germany*

- **DP 20/3**
  - J. Beckert, T. Ergen
  - *Transcending History’s Heavy Hand: The Future in Economic Action*

- **DP 20/2**
  - T. Arbogast
  - *Who Are These Bond Vigilantes Anyway? The Political Economy of Sovereign Debt Ownership in the Eurozone*

- **DP 20/1**
  - L. Einhorn
  - *Normative Social Influence on Meat Consumption*

- **DP 19/10**
  - J. Beckert, R. Bronk
  - *Uncertain Futures: Imaginaries, Narratives, and Calculative Technologies*

- **DP 19/9**
  - J. Garcia-Bernardo, A. Reurink
  - *Competing with Whom? European Tax Competition, the “Great Fragmentation of the Firm,” and Varieties of FDI Attraction Profiles*

- **DP 19/8**
  - S. A. Rothstein
  - *Innovation and Precarity: Workplace Discourse in Twenty-First Century Capitalism*

- **DP 19/7**
  - M. Kopper
  - *A Politics of Hope: The Making of Brazil’s Post-neoliberal New Middle Class*

- **DP 19/6**
  - R. Mayntz
  - *Changing Perspectives in Political Economy*

- **DP 19/5**
  - B. Braun, R. Deeg
  - *Strong Firms, Weak Banks: The Financial Consequences of Germany’s Export-Led Growth Model*

- **DP 19/4**
  - L. Suckert
  - *Der Brexit und die ökonomische Identität Großbritanniens: Zwischen globalem Freihandel und ökonomischem Nationalismus*

- **DP 19/3**
  - J. Wilkinson
  - *An Overview of German New Economic Sociology and the Contribution of the Max Planck Institute for the Study of Societies*

**MPIfG Books**

- J. Beckert
  - *Imaginierte Zukunft: Fiktionale Erwartungen und die Dynamik des Kapitalismus*
  - Suhrkamp, 2018

- M. Dewey, C. Dohmen, N. Engwicht, A. Hübschle
  - *Schattenwirtschaft: Die Macht der illegalen Märkte*
  - Wagenbach, 2019

- L. Elsässer
  - *Wessen Stimme zählt? Soziale und politische Ungleichheit in Deutschland*
  - Campus, 2018

- A. T. Hering
  - *Kinder – oder nicht? Geburten in Deutschland im Spannungsfeld unsicherer Partnerschaften und prekärer Beschäftigung*
  - Campus, 2018

- M. Hübner
  - *Wenn der Markt regiert: Die Politische Ökonomie der Europäischen Kapitalmarktunion*
  - Campus, 2019

- A. Leendertz, U. Schimank (Hg.)
  - *Ordnung und Fragilität des Sozialen: Renate Mayntz im Gespräch*
  - Campus, 2019

- M. Seeliger
  - *Trade Unions in the Course of European Integration: The Social Construction of Organized Interests*
  - Routledge, 2019

- T. ten Brink
  - *Chinas Capitalism: A Paradoxical Route to Economic Prosperity*
  - University of Pennsylvania Press, 2019

**Ordering Information**

**MPIfG Discussion Papers**
Order printed copies from the MPIfG or download PDF files from the MPIfG website (free).

**MPIfG Books**
At bookstores; abstracts on the MPIfG website.

www.mpifg.de
Go to Publications.

**New Titles**
Consult our website for the most complete and up-to-date information about MPIfG publications and publications by MPIfG researchers. To sign up for newsletters and mailings, please go the MPIfG website. Upon request to info@mpifg.de, we will be happy to send you our Recent Publications brochure.

The Max Planck Institute for the Study of Societies conducts advanced basic research on the governance of modern societies. It aims to develop an empirically based theory of the social and political foundations of modern economies by investigating the interrelation between economic, social and political action. Using primarily an institutional approach, it examines how markets and business organizations are embedded in historical, political and cultural frameworks, how they develop, and how their social contexts change over time. The Institute seeks to build a bridge between theory and policy and to contribute to political debate on major challenges facing modern societies.