

# **What is sociological about economic sociology?**

## **Uncertainty and the embeddedness of economic action**

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Over the last fifteen years economic sociology has developed into arguably one of the most vibrant fields within sociology. Beginning in the 1970s with works by Mark Granovetter, Allan Fox, Fred Hirsch, and Viviana Zelizer,<sup>1</sup> among others, economic sociology boomed during the 1980s and continues to do so in the 1990s. An important characteristic of scholarship within this field is its broad thematic, theoretical, and methodological scope, and simultaneously the understanding on the part of scholars to contribute to a common enterprise. The “new economic sociology” aims positively at a sociological understanding of economic structures and processes and unifies negatively in its critique of standard economic analysis of economic phenomena. Different strands in the debate developed under the umbrella of this wide understanding of economic sociology. They deal with all economic institutions, although using social relations, culture, cognition, norms, structures, power, and social institutions as explanatory variables for the interpretation of economic outcomes. The broad, two-sided understanding of economic sociology can be seen in Mark Granovetter’s seminal essay “Economic action and social structure: The problem of embeddedness.”<sup>2</sup> In this text, Granovetter develops the notion of embeddedness as a key concept for economic sociology in the first part and engages in a critique of transaction cost economics in the second.

The question that arises from the heterogeneity of different approaches in economic sociology is whether it is possible to identify a theoretical core to the field that provides a distinctive alternative to economics. What is the specifically sociological contribution to the understanding of economic phenomena? The most widely shared answer to this question is that sociology refutes the maximizing assumption that stands at the core of economic theory. Since the founding of the discipline in

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the nineteenth century, sociologists have been arguing against the action-theoretic model of an individualized *homo economicus* who strives restlessly for the maximization of utility. The observation that actors do not live up to the behavioral prescriptions set by the theory but behave “irrationally” is used as the central argument for rejecting orthodox economic theory.

In this article, I argue that such a rebuttal falls short of providing a convincing starting-point for a sociological contribution to the understanding of economic phenomena. It is not the action-model of *homo economicus per se* that should be the focus of critique against economic theorizing, but the underlying assumption that economic actors *can*, even in highly contingent situations, deduce their actions from a clear preference ranking and thereby maximize their utility. The article attempts to show that economic theory cannot maintain the maximizing assumption convincingly in the face of situational structures that are characterized by uncertainty. Uncertainty is understood as the character of situations in which agents cannot anticipate the outcome of a decision and cannot assign probabilities to the outcome. It is argued that the problem of uncertainty provides a vantage point for a sociological alternative to orthodox economics. The task of economic sociology in the proposed conceptualization is not to demonstrate that actors deviate intentionally from selfish goals and are guided by non-rational principles, but to develop theoretical concepts and engage in empirical investigations as to how intentionally rational actors reach decisions under conditions when they do not know what is best to do. Deviations from the prescriptions of economic theory are not explained with reference to the actors’ motifs but from the situational structure.

To develop the central thesis of the article, it is necessary to set out from some rather technical discussions of economic equilibrium models. This is unavoidable in order to justify why a sociological approach to economics can contribute to the understanding of economic processes, even if it is accepted that actors in the realm of the economy do attempt to enhance their selfish goals. It has to be shown why the economic model of universal maximization is not able to deal with situational structures characterized by uncertainty. Hence, the first part of the article reconstructs some of the major contributions from economics to the problem of uncertainty and draws two conclusions from this. First, equilibrium analysis centers around questions of incomplete and asymmetric information since the 1970s, thereby increasing its scope in the

explanation of economic phenomena, and bringing economics closer to topics formerly only of concern to sociology, institutionalism, or political economy. (Asymmetric information refers to situations in which one agent holds information unavailable to the other party.) Second, the incorporation of problems of uncertainty into equilibrium analysis proceeds in a way that maintains the rational actor model as the core behavioral assumption of economics, by reinterpreting uncertainty as risks to which probabilities can be assigned, and by assuming certain risk attitudes of agents that allow for the deduction of rational strategies.<sup>3</sup>

The second part of the article critically assesses the perspective on uncertainty in economics based on the discussions in the first part. It demonstrates that uncertainty in the sense of the preceding definition poses a serious problem for the rational-actor paradigm. At the same time it justifies a sociological approach to economic decision-making that proceeds from the problem of uncertainty: If we assume uncertainty, it is impossible for actors to deduce rational strategies from their given goal of utility optimization or profit maximization. Although all discussions on uncertainty in economics attempt to prevent crossing this threshold, it is a fundamental premise of sociology that actors cannot deduce their actions from individual preference rankings. We can use the different attitudes toward uncertainty as a key distinction between the two disciplines, that, at the same time, offers a systematic vantage point for sociological reasoning on the economy.

The last part of the article builds on the argument developed in the second part, i.e., the thesis that the concept of uncertainty offers a theoretical perspective that helps to integrate the broad scope of economic sociology. It is first demonstrated that the problem of uncertainty allows a systematic connection between social theory and economic sociology. Sociologically, uncertainty can be reformulated as a situation of double contingency, i.e., a situation in which actors make their actions reciprocally dependent on each other.<sup>4</sup> This refers to the problem of social order and thereby to social theory. The reintroduction of a Hobbesian problem of order opens up the sociological question of what actors do, if they do not know how to optimize. Subsequently, a phenomenology is proposed that lists the social "devices" that actors rely on when determining their actions and that help them to overcome the blockage of decisions under conditions of uncertainty without giving up on the assumption that actors are intentionally rational. At the same time it is emphasized that sociologists have to keep in mind

that they cannot offer a decision theory that could substitute for the rational choice assumption by unambiguously stating how agents act under conditions in which rational-choice theory fails. Whether such a theory is in principle possible is an open question but will not be addressed in this article.

### **Uncertainty in economic theory**

Standard neo-classical economics assumes that actors have complete knowledge of means-ends relationships and act on the basis of this knowledge to optimize their utility. The notion of complete knowledge allows for the functioning of markets according to the neo-classical model and for the development of equilibria that fulfill the conditions of Pareto optimality. Under the conditions of perfect and complete markets, economic theory can serve as a normative theory for determining how scarce resources are allocated by rational agents in order to achieve optimal outcomes and market clearing equilibria. Much of twentieth-century economics, especially General Equilibrium Analysis, deals with the mathematical formulation of the functioning of the economic system under the presupposed conditions.<sup>5</sup>

Although the notion of incomplete knowledge of agents already entered the economic discourse along with the marginalist revolution, it is only recently that the analysis of imperfect markets, as a result of incomplete information, came to the center of economic attention. Be it that economists felt they had solved all problems under the restricted condition of perfect knowledge, or because of the discrepancies between predictions and real market outcomes, the inclusion of incomplete information has brought a whole new array of problems and solutions into economic analysis. It has also stimulated recent economic modeling strategies like transaction cost economics, signaling theory, agency theory, and search theory. These schools have a common root in that they analyze market outcomes and economic institutions as a rational response to situations with informational constraints in which agents face uncertainty. Though this development is primarily intra-economic, it is nevertheless important for economic sociology because economic theory becomes in the course much more open to questions and to fields that it formerly excluded.

*Uncertainty in early twentieth-century economic thought*

The notion of uncertainty entered modern economic discourse as early as the marginalist revolution. Carl Menger and, after him, the Austrian School of economics, saw it as one of four central qualities responsible for a thing to become an economic good, that actors have knowledge about the causal relationship between the thing and its capability to fulfill human wants.<sup>6</sup> This knowledge of actors is, in contrast to the Walrasian model, not assumed in the premises of the theory. Instead, the Austrian School looks at the limits of human cognitive capacity as the source of uncertainty in the production process. Economic relations are characterized by the uncertainty of outcomes and unintended consequences of action, that also explain the role of the entrepreneur as a risk-taking agent who has presumably greater knowledge. However, the main usage of the concept of limits of knowledge of future state of affairs is appropriated by the Austrian School to denounce any kind of state-planning activities: in the face of uncertainty, the central-planning agency cannot have the necessary knowledge for a rational political determination of the production process.<sup>7</sup> The dispersion of knowledge of the relevant facts among many people makes prices the rational mechanism for the coordination of separate actions.

The most important conceptual contribution of economics to the problem of uncertainty comes from Frank Knight's distinction between risk and uncertainty. Knight's book *Risk, Uncertainty, and Profit* (1921) attempted to provide an explanation for the existence of profits in market economies.<sup>8</sup> Under the assumption of perfect markets (complete knowledge, no time lag, no monopolistic competition), economic theory cannot explain profits, because the market will attract new suppliers until the price of the good equals the marginal costs of the product. This model is based on "the assumption of practical omniscience on the part of every member of the competitive system," which is an unreachable goal.<sup>9</sup> Agents are uncertain about the future state of affairs and therefore cannot, in a dynamic economy, make decisions that lead to equilibria outcomes. Knight distinguishes between changes in the economy to which probabilities can be assigned, and situations where the individual has no information on which to base a calculation of probabilities. The first Knight calls situations of "risk," the latter "uncertainty." "The practical difference between the two categories, risk and uncertainty, is that in the former the distribution of the outcome in a group of instances is known (either through calculation a priori or from statistics of past experience), while in the case of

uncertainty this is not true, the reason being in general that it is impossible to form a group of instances, because the situation dealt with is in a high degree unique.”<sup>10</sup> Even economic change does not necessarily provide an explanation for profits, as argued by Schumpeter. If it is assumed that the change can be foreseen, it does not cause disequilibrium in the economy. Situations of risk can be transformed into situations of certainty by insuring against the risks. The insurance costs will be part of the production costs of all producers, and therefore there still will be no profit or loss. Hence, situations of uncertainty are crucial to the explanation of profits. Uncertainty brings the question of “deciding what to do and how to do it” into the foreground of economic analysis and makes the actual execution of activities into a secondary phenomenon.<sup>11</sup> For this, actors have to rely on “devices” that emerge as a result of uncertainty, and that help them make decisions under given informational constraints. Knight points especially to the specialization of functions in the enterprise through hierarchical structures and occupational role differentiation.<sup>12</sup>

In the same year when Frank Knight’s seminal book appeared, Keynes published the work *Treatise on Probability* (1921). Keynes is concerned with epistemological aspects of the problem of probability and uncertainty, and defines uncertainty, very similarly to Knight, as a situation in which probability “is unknown to us through our lack of skill in arguing from given evidence. The evidence justifies a certain degree of knowledge, but the weakness of our reasoning power prevents our knowing what the degree is.”<sup>13</sup> Keynes’s notion of uncertainty is directed against the notion of perfect knowledge in orthodox economics and becomes significant in Keynes’s discussion of investment behavior.<sup>14</sup> Capital investments are characterized by a high degree of uncertainty. The question arises, how do investors reach decisions for an investment.<sup>15</sup> In the *General Theory*, Keynes emphasizes the importance of conventions, particularly investor’s assumption “that the existing state of affairs will continue indefinitely.”<sup>16</sup> Moreover, Keynes stresses mimesis as a way to reduce uncertainty, as well as advice, fashion, and habit.<sup>17</sup> Each of those “devices” allows for a behavior that “saves our faces as rational, economic men,”<sup>18</sup> yet all are subject to sudden and violent changes. Uncertainty about the future yield of capital investments influences the volume of investment in irrational and unpredictable ways because it is based on the expectations of investors that do not have a rational basis. In consequence the liquidity-preference curve becomes unstable and elastic. Uncertainty therefore gives rise to the problem of investors’ expectations as a central variable for the determi-

nation of interest rates in Keynes's system. The volume of investments is subject to wide fluctuations, due to agents' propensity to hoard and the opinion-dependence of future yields of capital investments. Investors do not have the information to make optimizing investment decisions that would lead to market clearing equilibria. This in turn gives rise to the possibility of underemployment-equilibria. The introduction of uncertainty is central for Keynes to reach a more realistic understanding of economic processes: "If ... our knowledge of the future was calculable and not subject to sudden changes ... a small decline in money income would lead to a large fall in the rate of interest, probably sufficient to raise output and employment to the full. In these conditions we might reasonably suppose that the whole of the available resources would normally be employed; and the conditions required by the orthodox theory would be satisfied."<sup>19</sup>

### *Uncertainty in general equilibrium theory*

The reconstruction of the importance of uncertainty in the Austrian School and the work by Frank Knight and John Maynard Keynes, show that the topic had prominence in twentieth-century economics and that the concept was fundamental for the respective theories. All three theories acknowledge the limitations that uncertainty poses for the rational-actor model. But it was only much later, in the critiques of General Equilibrium Theory, that the problem of uncertainty came to the foreground of the discipline. Although the Austrian School, Knight, and Keynes were important and respected contributors to twentieth-century economics, they stood outside the core that developed along Walras's economic system and that had a much more mathematical orientation.<sup>20</sup> General Equilibrium Theory, as developed mainly by Arrow and Debreu in the 1950s, sets out to prove that the possibility of a competitive equilibrium in the economy does exist and that such an equilibrium is Pareto efficient. (Pareto efficiency refers to a situation in which no actor can increase his utility through further exchanges without making at least one actor worse off.) Arrow and Debreu can prove both claims in a mathematically rigorous manner, but at the same time they have to make the assumptions explicit on which the model rests. Most importantly they assume so-called "dated, contingent commodities" that allow for future markets for all goods, through which "agents can determine their entire production and consumption plans, for they know the prices of all goods in all future periods, and they can insure them against all eventualities."<sup>21</sup> The concept of dated, contingent com-

modities defines goods through four attributes: their physical characteristics, their place, the time of their exchange, and the external conditions at the time they get traded. There exists a market for each such defined good. For instance, there is a price for umbrellas that will be delivered in Princeton on March 24th, 2005 if it rains.

Arrow and Debreu deal with the problem of time and uncertainty by reducing the economy to a static equilibrium in which all economic activities take place at one point. Based on the assumption that all market participants share the same information, there will be markets for all future commodities. If the market is specified for all possible characteristics of the future situation, uncertainty is transferred into a situation in which the same market mechanism applies as it would under conditions of certainty. The assumptions on which the model rests imply in turn that one cannot find a competitive equilibrium in the economy if the markets for future goods do not exist or exist only incompletely. Under conditions of incomplete markets not all agents can exchange every good with every other agent (directly or indirectly) with the result of competitive allocations that must not be Pareto efficient. The question therefore becomes, under what conditions must we expect incomplete markets?

Arrow himself brought attention to the limitations of General Equilibrium Analysis in light of the asymmetric distribution of information, that is, situations in which one party to a transaction holds information unavailable to the other.<sup>22</sup> Asymmetric information leads to moral hazard, adverse selection, agency, and the possibility for strategic behavior.<sup>23</sup> Over the last twenty-five years, problems of uncertainty caused by asymmetric information have come to the center of equilibrium analysis. Much of this research was also stimulated by the development of game-theory. Games may be interpreted as a special case of uncertainty due to asymmetric distribution of information: In a game of incomplete information,<sup>24</sup> there is uncertainty about the strategic choices of other players that determine the pay-off but cannot be controlled or anticipated, nor can the probabilities associated with various possible strategies be predicted.<sup>26</sup> The problem introduced by game theory is the possibility of multiple-equilibria that arise when an agent is indifferent to two or more alternatives: Many games have an infinite number of possible equilibrium-points and rational-choice theory cannot explain why a specific equilibrium has been selected and not another.<sup>26</sup> This problem jeopardizes rational-choice theory as a predictive theory for unique competitive outcomes and as a normative



theory of how actors shall act. Game-theorists respond to the challenge posed by multiple-equilibria by either attempting to limit the number of equilibrium-points through refining the concept of equilibrium itself, or by designing the mechanisms being played so as to eliminate undesirable equilibria as unplausible.<sup>27</sup>

The critique of the assumptions of the Arrow-Debreu model set out a new research agenda in neoclassical economics that focuses on consequences, once the assumption of symmetric information of all agents is relaxed. The problem of uncertainty per se is considered to be well understood in equilibrium analysis using Bayesian probabilities for the determination of expected-utilities.<sup>28</sup> The theory of rational expectations deals with the uncertainty of future events by assuming that agents can anticipate rationally the choices of other agents using the information they hold from the observation of past behavior of the agent. The models assume that economic actors behave as if they know the structure of the economy so they can deduce optimal forecasts despite the ongoing changes in the economy.<sup>29</sup> If no objective probabilities can be calculated, the expectations of agents are modeled by using Bayesian decision theory, which operates with subjective probabilities. Therefore the model used to deal with situations of uncertainty does not change fundamentally for economists even if they assume the absence of objective probabilities because agents can attach subjective probabilities to outcomes, provided that actors share *the same* information and *the same* subjective probabilities. “Bayesian rationality” can be integrated into static economic analysis.<sup>30</sup> This claim has been empirically challenged with the argument that the degree of foreknowledge and rationality attributed to agents in these advanced economic models becomes increasingly sophisticated and it becomes more and more unlikely that economic actors understand all relevant variables of the model properly. But this in itself does not yet constitute a *theoretical* challenge that would affect the theoretical validity of economic decision-making models that deal with uncertainty.

This changes once asymmetric information is considered.<sup>31</sup> The introduction of asymmetric information gives insight on how market failures might arise and whether outside corrections can improve welfare. The understanding of seemingly Pareto-inefficient market outcomes in a particular situation expands economic analysis to integrate economic phenomena into the models that could not be before. Market failure in the light of asymmetric information has been used fruitfully for the analysis of principal-agent problems, adverse selection, and industrial

organization.<sup>32</sup> Such failures cannot be understood under the assumption of optimizing behavior in the absence of asymmetries. The problem that arises from asymmetric information with regard to the problem of uncertainty is that one cannot unambiguously say that a change in the situation through further trade will make all participants better off, i.e., be Pareto efficient. This is not a problem under conditions of certainty or uncertainty, that all agents face equally. Under either of the latter conditions everybody knows whether further trade will increase the Pareto efficiency, and the occurrence of trade is contingent on the fulfillment of this condition. “When each agent has different information the problem becomes more complicated. Some agents may know that certain events cannot happen while others may not know this. What probabilities should be used to calculate an agent’s expected utility – his own beliefs, those of the best informed agent, the totality of the information held by all agents or some entirely different probability?”<sup>33</sup>

*The conflation of risk and uncertainty in modern economic theory*

The incorporation of problems of uncertainty and asymmetric information into equilibrium analysis brings neoclassical economics closer to sociology in two ways: First, economics opens its analysis to hitherto externalized economic phenomena and thereby makes its research more accessible to observable phenomena of economic reality. Examples for this are the consideration of market failures due to problems of adverse selection and moral hazard, the explanation of unemployment in efficiency wage models, and the introduction of control problems. The new microeconomics points to shortcomings in the Arrow-Debreu model; the Pareto-optimality of the equilibrium is no longer assured. Second, the economics of information does not limit its scope to the relationship between an individual and a good, but incorporates the game-theoretic intuition of the strategic character of relationships between two or more subjects: the action of another individual becomes a relevant part of the “situation.”

One further step is taken by the new institutional economics, that interprets alternative governance structures as transaction-cost efficient outcomes of uncertainty problems and opportunism in market exchanges.<sup>34</sup> Transaction cost analysis seeks an explanation for the existence of organizations, that cannot be explained by neoclassical models that assume complete knowledge of all agents, i.e., no transaction costs.

While the new microeconomics focuses on the institution of the market<sup>35</sup> and attempts to explain Pareto-inefficient equilibria, the new institutional economics investigates the emergence of specific governance structures as efficient outcomes caused by market failure. The institutional approach in economics adds a third element to economic analysis that brings it yet closer to sociology: It has looked at institutions that limit the choice set of economic actors and thereby reduce the uncertainty of the situation. This in turn broadens the scope of economic analysis once more: Institutions like the firm or property rights are seen as important explanatory variables for economic outcomes. At the same time, they are investigated by most economists as efficient solutions to the problem of uncertainty.<sup>36</sup>

Although the theoretical developments in the new microeconomics bring economic reasoning closer to sociology in a substantial way, they nevertheless keep the distance from sociological modes of reasoning by maintaining the rational-actor assumption. The new microeconomics and game-theory see uncertainty due to informational constraints and multiple-equilibria as theoretical complications that are dealt with in a way to maintain the rational-actor model as a basis for a normative decision theory. Based on Bayesian solutions it is assumed that there is a rational strategy that actors choose and one that the other actor knows will be chosen. Hirshleifer and Riley reject Knight's distinction between risk and uncertainty altogether and operate only with subjective probabilities.<sup>37</sup> In game-theory, multiple equilibria are reduced to single equilibrium-points using the two mentioned principles of equilibrium refinement and revelation.<sup>38</sup> These reinterpretations of problems of uncertainty stand in clear contrast to the earlier contributions of Knight and Keynes, who focused on uncertainty as a *limitation* to the rational-actor model.<sup>39</sup> We can see from this that the earlier concern of economists, who used the concept of uncertainty as the basis for a critique of the rational-actor model, is reformulated in the new microeconomics in order to protect the model of *homo economicus*.

Two interrelated strategies can be distinguished for the preservation of the rational-actor model: First, situations of uncertainty are reinterpreted as situations of risk – in the sense of Knight's distinction – in that the individual has information on which to base probability calculations.<sup>40</sup> The mathematical models for optimal behavior under conditions of uncertainty, redefined as risk, are increasingly sophisticated but depart from observed behavior of economic agents.<sup>41</sup> The attempt is to maintain the rational-actor model as a normative theory. Second,

because choices under uncertainty are dependent not only on preferences but also on the actor's capacity to tolerate risk, normative concepts of attitudes toward risk that determine the rational strategy in a given situation are developed.<sup>42</sup> The outcome changes dramatically depending on whether we assume risk-averse actors applying a maximin strategy, i.e., a strategy that maximizes on the limitation of potential damage, or risk-preferring or risk-neutral actors. All options are consistent with rationality, but neither is dictated by it.<sup>43</sup>

### **A sociological interpretation of uncertainty**

The examination of the perspective on uncertainty and asymmetric distribution of information in economic theory yields two results: On the one hand the economics of information takes into account the possibility that actors cannot achieve Pareto-optimal outcomes under conditions of uncertainty. This opens economic reasoning to dealing with substantial problems that were not systematically dealt with before: unemployment, the firm, property-rights, problems of control, and mechanism-design are some examples for this tendency. Economics comes, in a substantial sense, closer to sociology. At the same time, the new microeconomics attempts to deal with problems of uncertainty as a mere complication of its theoretical models and not as a fundamental challenge to the core of economic theory. The rational-actor model as the most fundamental premise of economic theory remains unaffected, because situations of uncertainty are treated as situations of risk in Frank Knight's sense. The approaches of earlier economists to use the notion of uncertainty to overcome the economic model of rational actors are not followed any longer.

In contrast to this, I argue that the assumption of uncertainty, defined as a situation in which actors cannot predict outcomes and cannot assign probability distributions to possible outcomes does indeed challenge the capability of actors to allocate scarce resources in a way that their utility is optimized, thereby threatening the notion of rational choice as the core behavioral assumption of economic theory. If one can argue from a theoretical perspective that the complexity of causal relationships in the economy creates uncertainty and does not allow actors to deduce actions from preferences, because the actual effects of actions cannot be fully anticipated, then it becomes important to look at those cognitive, structural, and cultural mechanisms that agents rely upon when determining their actions without knowing what to do in

order to maximize their outcome. The notion of uncertainty is then interpreted as a much more fundamental challenge to economic theory: it not only complicates decision-making processes, but also calls into question the optimizing assumption itself. In cases of multiple equilibria, one would look at the sources of knowledge that actors apply who know what to do, even in situations for which the theory cannot tell them unambiguously how to act. The discussed problems of rational-choice as a normative decision theory open a space for the sociological question of how actors reduce uncertainty and stabilize highly contingent interactive situations.

### *Sociological critiques of rational-choice theories*

In order to express why the problem of uncertainty offers a systematic vantage point for a sociological understanding of economic decision-making, I first discuss sociological critiques that have been raised against neo-classical rational-choice theory. This discussion shows that these critiques do not provide a convincing rebuttal to the rational-actor model under the assumption of complete knowledge. However, due to the situational differences that actors confront in their decisions, the acknowledgment of uncertainty changes the systematic bearing of these critiques.

Sociological critiques of orthodox economic theory stress the discrepancy between the behavioral predictions of the model and empirical observations of actual behavior of actors.<sup>44</sup> The finding that actors do not live up to the prescriptions of the theory, but behave irrationally by the standards set by it, is used as the central argument for rejecting orthodox economic theory. This empirical argument takes two forms, which can be termed irrational behavior with and without regret.<sup>45</sup> Irrational behavior with regret refers to actions that violate the predictions of economic theory, but “people usually want to act differently once the consequences of their behavior have become clear to them.”<sup>46</sup> On the other hand, irrational behavior without regret represents a conscious deviation from economic rationality in that the actors hold convictions about just or appropriate behavior, and let their decisions be guided by these normative standards.<sup>47</sup> Although few economists would question the existence of both kinds of action,<sup>48</sup> and rational-choice theory fails in light of them,<sup>49</sup> it is difficult to build a sociological alternative to the economic assumption of rational actors based on them. In the case of irrational behavior with regret, the failure of people

to live up to the behavior predicted by economic theory only gives way to the normative demand for a more rational behavior, because irrationality makes us worse off than we want to be. Jon Elster formulated this in the statement “we take little pride in our occasional or frequent irrationality.”<sup>50</sup> At best, we can try to locate the mechanisms that distract people from optimizing their goals, and try to either remove those mechanisms or educate actors so they can avoid them. This might lead to interesting findings regarding the causes of irrational behavior,<sup>51</sup> but leaves rational-choice theory as a normative theory of decision-making unaffected.<sup>52</sup> Moreover, the very notion of irrational behavior presupposes by definition the rational-actor model as a reference and can therefore not supersede it.

The more fundamental problem for rational-actor models can be discerned in irrational behavior without regret. Many observations show that people voluntarily take costs upon themselves that contradict the principle of utility maximizing allocation of resources, or forego opportunities, but would nevertheless do so again, even after the “irrationality” of their behavior has been brought to their attention.<sup>53</sup> Typical examples are voting, donations, tipping at a restaurant to which one will not return. This behavior points to the problem that rationality has to be read as a variable individually or socially defined, and not as a constant, as assumed in economic theory.<sup>54</sup> Irrational behavior without regret rebuts rational choice theory as a normative decision-theory: We do not always want to optimize our individual utility even if we know how to do it.

Nevertheless, there are two arguments that can be brought forward in defense of the maximizing assumption: First, under the conditions spelled out by neo-classical theory (competitive markets), the firm can only survive if it organizes its production according to the price of the factors of production and the anticipated market size. The production function is externally determined, and a deviation from it would mean that the firm will be wiped out by competition. This points to *systemic limitations* for the possibility of irrational behavior on the part of the firm. On the part of the household the systemic restrictions seem not to apply or only in a much more relaxed sense of physical and social reproduction. This leads to the second argument. Most of the discussed examples of value-rational behavior can be found on the part of the household and involve little costs (tipping), or they are located outside the realm of the economy (voting). Moreover, conscious irrational behavior can in many cases be reconstructed as having a utility for the

actor. This utility can be derived from the joy of participating in the creation of a public good, from the moral confirmation the actor derives from it, from selective incentives, or from processes of identity formation,<sup>55</sup> and can therefore be reformulated in a rational choice framework. Market exchanges, that involve trust and that sociologists consider to depend on social preconditions,<sup>56</sup> can be largely explained within a game theoretical framework under the condition that actors expect an iterative game.<sup>57</sup> In addition, it can be shown in many instances that traditional behavior changes once new opportunities become available to the actors.<sup>58</sup> The conclusion which can be drawn from this discussion is that although one can find many examples for agents who consciously deviate in their actions from optimizing, irrational behavior without regret offers only a very limited basis for a sociological critique of economic reasoning.

The explanatory and predictive capabilities of a theory that assumes that economic actors in modern, differentiated societies base their actions normally on the premise of improving their utility are far greater than those of a theory that attempts to explain economic behavior from the assumption of an *intentional* deviation from utility maximizing behavior. Cases in which actors do not do so are rather exceptions from the norm. Attempting to base a sociological critique of economic rational-choice assumptions on these exceptions limits sociological reasoning to “pathological” cases and ironically accepts the validity of the rational-choice theory for the “normal” behavior of actors. From these arguments I want to assert that neo-classical economic theory provides us a robust normative theory for the prediction and explanation of behavior of actors in economic settings *under the conditions of perfect markets and complete knowledge*.

### *Uncertainty as the vantage-point for economic sociology*

However, pointing to the difficulties of a sociological critique of standard economic theory neither means that economic theory draws an adequate picture of economic processes nor that “irrational” behavior can simply be disregarded, because it logically depends on the model of rationality developed in the notion of *homo economicus*. The discussion shows only the theoretically weak basis for a sociological alternative to standard neo-classical models that juxtaposes rational to irrational behavior, and sees the justification for a sociological treatment of economic phenomena in the empirical observation of behavior

that contradicts the economic model of rationality. This is not to doubt the existence and importance of normatively guided behavior in economic contexts, but to bring attention to the question as to *why* such an orientation can maintain its importance despite the institutionalization of a rational behavior orientation in modern market economies. As long as we assume that actors can actually deduce their actions from a preference ranking and maximize their utility or profit by simply following this script, a sociological critique that points to irrational behavior without regret has to assume that actors *willingly* transcend their interests for the possibility to act according to normatively held convictions. Although I do not doubt that this actually happens, it would presuppose an extremely strong moral order in society in order to have systematic influences on economic decision-making. The moral order would be necessary to prevent the exploitation of those agents who cooperate by free-riders. This cannot be expected in modern societies because of the institutionalization of instrumental behavior orientation and systemic mechanisms that discourage deviations from instrumental rationality in market contexts.<sup>59</sup>

Instead, I want to suggest that one look at the rationality of action in economic contexts as a variable that depends on the *situational structure* actors face. The focus of critique against economic theorizing is not the action-model of *homo economicus per se* but the underlying assumption that economic actors can, even in complex situations, deduce their actions from a clear preference ranking and thereby maximize their utility. The acknowledgment of uncertainty according to the above definition allows for a much more convincing sociological starting-point for theorizing about the economy, because it transcends the dichotomy of rational versus irrational action itself. Under the condition of uncertainty it becomes *ex ante* impossible to determine whether a chosen means is rational or irrational for the achievement of the goal of optimizing or maximizing. The problem is not only that information is costly but that the marginal utility of an investment in the search for information cannot be determined. Consequently, we cannot allocate resources rationally between competing ends because we cannot determine opportunity costs *ex ante*. It becomes inevitable that we make right and wrong decisions on the basis of right and wrong assumptions, without ever knowing *ex ante* whether we will regret or praise our decisions *ex post*.<sup>60</sup>

An example is the explanation of unemployment in search-theory that maintains that rational agents quit a job in order to look for a better



one. This decision cannot be made rationally, if we do not know the costs of it, i.e., if it is unknown how long it will take to find a new job and what the benefits will be. Even if we assume that an optimal strategy can be mathematically deduced, there remains an inverse relationship between the complexity of the situation and the chance of making the right decision: The greater the situational uncertainty, the lower the chance of recognizing the right situation in which to select an action, and the greater the chance of not detecting the wrong situation for selecting it.<sup>61</sup> The structural characteristics of uncertainty do not allow for rational decisions in the sense of economic theory for the achievement of given ends.

The problem of uncertainty brings into question the core of economics as a normative decision theory because it negates the possibility for defining what the rational choice would be.<sup>62</sup> The problem that arises from uncertainty can be stated in the following question: "What do we do if we do not know what is best to do?" This constitutes a category for the analysis of action that transcends the simple dichotomy of rational versus irrational behavior and that can be called *intentional rationality*. The focus of intentional rationality is not the category of ends as in the critiques of the economic action model of "a man" that show that people are not only driven by selfish motives, but means-end relationships. Actors are considered intentionally rational when they want to achieve a goal that optimizes their utility, but do not know the best means to apply for realizing this goal. The notion of rational and irrational action presupposes logically a knowledge about the relationship of means to ends, as it remains otherwise impossible to distinguish the two categories, without being caught up in tautological notions of revealed preferences. From this it can be seen that the notion of uncertainty poses a real challenge to economic theory, since the causality of actions is brought into question. This also explains why economists are so hesitant to acknowledge uncertainty and try to transform it into the category of risk, based on the assumption that there is always some information available that can be used to assess the probabilities of various outcomes.<sup>63</sup>

I want to argue, contrary to the path chosen by economists in dealing with the problem of uncertainty, that intentionally rational economic agents do not increase their calculative capabilities for determining probabilities in order to master uncertainty. Rather they rely on social "devices" that *restrict* their flexibility and create a *rigidity* in the responses to changes in an uncertain environment.<sup>64</sup> The term "social

devices” encompasses all forms of rules, social norms, conventions, institutions, social structures, and power-relations that limit the choice set of actors and make actions at the same time predictable. The logic for this deviation from the prescriptions of rational-choice theory lies in the situational structure of uncertainty. If, in a sufficiently complex situation, the likelihood of discerning an optimal strategy becomes sufficiently small, it becomes rational to deviate from a presumable optimal strategy to “rigidly structured solving procedures that employ a small repertoire of solving patterns.”<sup>65</sup> Although the rule-determined strategy does not fulfill the optimizing criteria, it is superior if the likelihood for a misinterpretation of the situational structure, i.e., uncertainty, is high. “The reason is that uncertainty produces mistakes about distinguishing the right from the wrong conditions to select an action, which condition is necessary to determine the right probabilities of choosing an action.”<sup>66</sup> Thus rigidity – the limitation of response patterns – is under certain conditions preferable to flexibility, and we would therefore assume a positive correlation between uncertainty and rule-governed behavior that restricts the choice-set of agents.<sup>67</sup> The notion of deviation from an optimal decision still presupposes the possibility of calculating probabilities and the argument is behavioral in that it emphasizes the gap between prescribed and factual behavior. If we look at uncertainty, that excludes the very possibility of an optimal strategy, agents can only act by relying on rules or choosing creative solution procedures (innovations) whose efficiency cannot be anticipated.

So far the emphasis of the argument has been on the causal structure of the situation that actors face: If we assume a situation of uncertainty, the rational-actor model cannot tell us unambiguously how to allocate our means in order to achieve optimal outcomes. The reason for uncertainty can be seen in the complexity of causal relations in the social world, which leads to unintended consequences and prevents the anticipation of outcomes. This leads to the failure of economic theory as a theory of social order and reintroduces the Hobbesian problem: at least some actors will not achieve optimal outcomes and markets will not develop stable Pareto equilibria. It is possible to distinguish economic and sociological perspectives on decision-making in economic contexts according to their respective treatment of the problem of uncertainty: Economics deals with the problem by focusing on the transformation of situations of uncertainty into situations of risk. Sociology assumes that actors cannot base their decisions on a preference order that allows for utility optimization, but that intentionally rational actors live in a socially structured world that helps them act meaningfully despite the uncertainty of the situation.

*Bounded rationality and the problem of uncertainty*

Within post-war economics, the strongest case for the recognition of the problem of uncertainty has been made by the behavioral models of the Carnegie School. Simon introduced the notion of bounded rationality that questions the behavioral assumption of maximizing in economic theory from the perspective of cognitive psychology.<sup>68</sup> Simon argues that, because of their limited cognitive capacity, decision makers do not seek the optimal alternative but make a decision once they have found an alternative that satisfies their aspiration level, that is defined by their ambitions, perceived needs, future plans, etc. "The limits of rationality have been seen to derive from the inability of the human mind to bring to bear upon a single decision all the aspects of value, knowledge, and behavior that would be relevant. The pattern of human choice is often more nearly a stimulus-response pattern than a choice among alternatives. Human rationality operates, then, within the limits of a psychological environment."<sup>69</sup> The theory of bounded rationality points to three aspects of decision-making that are important for a sociological theorizing about uncertainty: First, actors are interested in optimal outcomes but they cannot attain these because their limited cognitive capabilities do not allow for a rational selection process between all given alternatives. Second, the point at which agents make a satisfying decision reflects personal and social criteria. Third, the objective criterion on the systemic level is not a Pareto optimal equilibrium but the reproduction of the actor (individual, organization). The weakness of the notion of satisfying is that Simon cannot operationalize at what point decision makers stop the search for further alternatives. This gave rise to an interpretation by orthodox economic critiques that stopping further search for alternatives at a given point is in fact a form of maximizing behavior, given the costs of further information gathering.<sup>70</sup> It should be clear by now that this argumentation runs into the problem that is posed by the definition of uncertainty, namely that one does not know the pay-off of an investment in a search *ex ante*. Therefore, the problem remains that there is no positive response, that can be given from the perspective of the theory of bounded rationality, to the question of at what point the search for alternatives will stop.

The problem of uncertainty for determining optimal strategies evolves from a gap between the complexity in the causal structure of the situation and the cognitive capabilities of the actor. Although the critique of the optimizing hypothesis based on Knight's definition of uncertainty focuses on the *situational structure*, the theory of bounded rationality

focuses on the actor. Simon does not question rational-choice theory as a normative theory of decision-making, because the limitations to optimizing behavior derive from cognitive limitations, that can, in principle be overcome if the computational capacities of actors could be increased. This belief is expressed in Simon's interest in computer technology as a means to improve decision-making processes and to overcome limitations of human reasoning.<sup>71</sup> Although the possibility to reduce actors' uncertainty about optimal decisions by increasing technical competency can be questioned,<sup>72</sup> the notion of bounded rationality indicates that actors cannot optimize their decisions under given circumstances of cognitive capabilities and therefore make decisions that satisfy their aspiration level. A sociological treatment of uncertainty as a constraint on rational decision-making has to take into account both the actor and the situation. Cognitive processes are not only quantitatively limited but produce systematic biases in reasoning processes<sup>73</sup> and are, moreover, socially influenced.<sup>74</sup> At the same time it is also the complexity of causal relationships that leads to unintended consequences and prevents actors from optimizing behavior.

In order to emphasize the differences between the economic approach in equilibrium theory to the problem of uncertainty and the sociological response, it is helpful to look at the sociological critique of Simon's theory. As stated above, Simon does not doubt the possibility of optimal solutions as such, but explains sub-optimal decision-making by cognitive limitations that can in principle be overcome. This had led to the criticism that Simon does not sufficiently take into account the social influence on decision-making processes. Hodgson has argued that Simon's critique of economic rationality is "an incomplete challenge" because it sees this only as bounded and does not reject the notion of objective rationality itself.<sup>75</sup> Hodgson also stresses the cultural specificity of cognition and the manipulation of information through pre-established interpretative schemes.<sup>76</sup> Such schemes can be conventions or routine types of behavior and suggest that economic decision-making follows socially legitimized patterns, rather than the economic notion of global maximization. In a similar vein, but from a more philosophical background, Murphy has questioned the possibility of optimizing behavior on the ground of epistemological considerations by pointing to the interpretative nature of reason.<sup>77</sup> Knowledge, the argument goes, is derived from language games (Lyotard) or the social milieu of the life-world (Habermas), and is therefore bound by a concrete social setting and not just by inadequate cognitive skills. If one follows this argument, the notion of optimizing becomes nothing more than a language game itself and loses its positivistic character.

The juxtaposition of the orthodox economic critique of Simon's theory of bounded rationality and the sociological or philosophical critiques shows again the essential difference of the fields in dealing with the problem of uncertainty. Economists attempt to negate the problem and thereby to save the crucial notion of rational actors; sociologists negate the concept of optimizing rationality itself and thereby expand the problem of uncertainty to the point that it becomes the all-encompassing condition of economic action: there cannot be optimal solutions, because rationality is localized. The opening of Pandora's box by economists who attempt to widen the narrow application of their theory is appropriated and radicalized.

### **Uncertainty, social theory, and the problem of order**

So far, I have been showing that the problem of uncertainty poses a systematic limitation to rational-choice explanations of actor behavior. The problem that uncertainty of means-ends relationships opens up can be stated in the question: "what do actors do if they do not know how to optimize?" Uncertainty brings those rules of social life that actors rely on to make decisions to the center of analytical attention. The sociological approach states that actors are much less calculative, even if they are intentionally rational in their behavior. Simon's notion of bounded rationality shows, from the perspective of the agent, that economic actors are satisfying rather than behaving as maximizers. Economic and sociological assessments of decision-making therefore do not differ primarily on the dimension of ends, but on the assumption of the possibility of finding optimal means to reach followed goals. The formation of ends itself has to be understood rather from the attempt of actors to act meaningfully in a complex, uncertain environment, and it itself serves the function of reducing uncertainty.<sup>78</sup> This conception challenges attempts to juxtapose sociology and economics on the axis of rational versus irrational behavior orientations,<sup>79</sup> and highlights the difference in approach to the relationship between means and ends.<sup>80</sup>

The last part of this article argues that, by reformulating uncertainty sociologically as a problem of order, the problem of uncertainty can be used to connect the economic problem of allocation of scarce resources to social theory. The aim is to demonstrate that concepts of social theory can be systematically used for a sociological understanding of economic processes. For the purpose of this article I limit myself

to a few theoretical remarks and to certain examples that illustrate the use of social theory for the sociological analysis of economic issues.

*Maximizing and the problem of social order*

The assumption of utility-maximizing behavior in economic theory has its root in the problem of social order, that stood at the center of much of eighteenth- and nineteenth-century social theory. The market as the central institution for coordination of individual actions was justified by liberal social theory on the basis of the claim that it would allow for the optimal welfare of all participants without jeopardizing individual freedom-rights. At the same time it was expected that the market would have pacifying effects on social relations with only minimal moral demands on the actors.<sup>81</sup> The hypothesis of natural identity of interests solves the problem of order by claiming that a person's pursuit of his or her own ends does enhance the attainments of others, given the mechanisms of the market, money, and contract. Under the conditions spelled out by General Equilibrium Analysis of complete markets, "order is grounded in each agent acting rationally to maximize his or her own preferences within the constraints of a competitive economy."<sup>82</sup> By pointing to the market as a sufficient institution for the coordination of individual action and the reproduction of a stable equilibrium, liberal economic theory rejected those contract theories that were based on the idea that individual sovereignty has to be surrendered to the Leviathan in order to end the state of nature.<sup>83</sup> Much of sociological theory in the classical phase of sociology (1890–1920) developed as a critique of these liberal premises.<sup>84</sup>

As Peter Wagner has argued, classical sociology can be understood as an attempt to defend liberalism at a time when the liberal promise of the development of a harmonious social order from the persuasion of self-interest in the market realm came under severe attacks from Marxism, and when the need for social reform became imminent.<sup>85</sup> Given the social conflicts of nineteenth-century industrializing countries, it is not surprising that contemporary observers concluded that the market is an insufficient institution for the reproduction of social order, and that it would need regulatory activities in order to maintain or reinstate a stable social development. At the same time, liberal economic theory did not provide a basis on which interventionist strategies could be developed.<sup>86</sup> The German Historical School, American Institutionalism, and Durkheim's sociology all developed as reactions to this

social and scientific crisis and attempted to end social anomie by making proposals for socio-economic reforms.<sup>87</sup> The newly developing sociological theories of order were equally critical of revolutionary change as proposed by Marx and Marxist theories, instead, they maintained the liberal perspective of a differentiated social structure. Classical sociology reintroduces therefore a Hobbesian problem of order, but maintains a liberal perspective by rejecting the state as the central coordinating institution. Sociological theory looked at a whole range of cultural, structural, institutional, and cognitive devices that stabilize social relations under the condition of modernity.

On an abstract level one can describe sociology as the field that examines the question of how actors can reproduce a social order through their actions without being able to rely on a preference ranking that allows them to determine their actions unambiguously, solely based on their individual utility function. Under systematic aspects it is the reproduction of social order that takes the position of equilibria in economic theory. General Equilibrium Analysis spells out the conditions under which actors who pursue their individual ends do not confront the problem of order, because the situation is structured in a way that allows for "single exit" solutions.<sup>88</sup> It is only through the problem of uncertainty and the emergence of multiple-equilibria that the problem of order reappears in economic theory. Under conditions of uncertainty, economic actors cannot rank preferences and determine means to achieve given ends rationally but nevertheless have to act under these conditions. This leads to the question of how actors reduce the complexity they confront in decision-making processes.<sup>89</sup>

This was already the question that arose for the economists Frank Knight and John Maynard Keynes from the problem of uncertainty. Their concern with mechanisms for the reduction of contingencies that arise from the indeterminacy of the situation, such as hierarchical structures, role differentiation, advice, and habit connects their reasoning with sociological approaches to the problem of order. However, since the problem of social order is the focal point of sociological theory it can be expected that sociological theory is an especially well-suited source to find concepts that can be applied to the analysis of economic processes under conditions of uncertainty. Using social theory as a source for economic sociology is not limited to sociological conceptualizations of the economic order.<sup>90</sup> General sociological concepts, which deal with the problem of coordination of social action and the relationship between agency and structure, can be used for the

understanding of the structuring of economic outcomes under conditions in which situational characteristics do not allow for maximizing behavior and a harmonizing of social relations through the identity of actor interests.

The most general formulation of the problem of order was presented by Parsons and Shils through the notion of the “double contingency” of social action.<sup>91</sup> Double contingency means that action related to others is not only dependent on ego but also on an alter that is just as free and just as capricious in its decision as ego. Under the condition of double contingency, action will only take place if actors can establish reciprocal expectations with regard to the responses of alter, and that ego has to be able to anticipate. Hence, social action and the reproduction of a social order is dependent on the reduction of uncertainty. This presupposes the existence of complementary expectations. In contrast to the strategic approach of game-theory in the analysis of non-cooperative games, which overcomes the problem of double contingency by assuming rational action on the side of both agents,<sup>92</sup> Parsons and Shils see a normative orientation of actors as a prerequisite for social action.

If punishment or reward by alter is repeatedly manifested under certain conditions, this reaction acquires for ego the meaning of an appropriate consequence of ego’s conformity with or deviation from the norms of a *shared symbolic system*. A shared symbolic system is a system of “ways of orienting,” plus those “external symbols” which control these ways of orienting, the system being so geared into the action system of both ego and alter that the external symbols bring forth the same or a complementary pattern of orientation in both of them. Such a system with its mutuality of normative orientations is logically the most elementary form of culture. In this elementary social relationship, as well as in a large-scale social system, culture provides the standards (value-orientations) which are applied in evaluative processes. Without culture neither human personalities nor human social systems would be possible.<sup>93</sup>

Although one does not have to follow Parsons’s and Shils’s assertion that the problem of double contingency can only be overcome through a shared value system, it is the problem itself that forms the base for the sociological approach to the understanding of decision-making in economic contexts characterized by uncertainty: We need expectational structures that reduce the contingency inherent in social interactions for the reproduction of social order. The game-theoretic assumption of rational action on the parts of ego and alter is not a satisfactory solution to this problem under the conditions of uncertainty and the emergence of multiple efficient equilibria. The distinctive contribution



of economic sociology can then be understood as the analysis of the expectational structures that economic actors rely on for the reduction of uncertainty in decision-making processes.

*Social devices for the reduction of uncertainty*

Those “devices” can be systematized in a heuristic of four broad categories that have their common denominator in their function of making alter’s action predictable for ego. All four categories have a rich tradition in sociological theory:

1. Tradition, habit, and routines. The notion of habitual behavior can be seen as one of the most central concepts for the explanation of actor behavior in complex situations. Its prominence was felt in classical sociology,<sup>94</sup> in economic discussions of behavior under uncertainty,<sup>95</sup> and is still present in current debates in economic sociology.<sup>96</sup> By acting on the basis of habits or routines, agents avoid the costs of calculating and make their behavior predictable for third parties. Routines stabilize social interaction by forgoing the option of reflection. Durkheim already pointed out in the discussion of the anomic division of labor that the rapid social change of industrialization destroyed traditional forms of social relations without leaving time for the emergence of new ones.<sup>97</sup> Durkheim expected economic anomie to vanish once the pace of social change reduces and new habits develop that become a moral force in regulating economic life. Weber sees that “the patterns of use and the relationship among (modern) economic units are determined by habit,” and his definition of traditional action states that this action type is “determined by ingrained habit.”<sup>98</sup> Giddens makes humans’ need for “ontological security” responsible for the dominance of routine behavioral patterns that unintentionally reproduce the structures of their worlds.<sup>99</sup>

2. Norms, institutions. Norms and institutions are defining subjects of sociological reasoning since the emergence of the discipline. Institutions create reciprocal expectations for interaction and limit the choice set of actors, thereby reducing uncertainty. The sanction potential that is based on the strength of the relationship, social norms, or third-party enforcement reduces the risk of alter’s defection from prior commitments. By relying on institutional structures, choices become informed by social context.<sup>100</sup> The importance of institutions other than the market for the explanation of economic

action has also come into the focus of economics over the last two decades.<sup>101</sup> But in contrast to most economic approaches to institutions, sociology does not analyze the emergence of institutions and their dynamics as efficiency driven. Instead, institutions have to gain legitimacy within a given social order and are therefore rooted in a specific social context. Moreover, sociology looks at informal institutions that are rooted in the life-worlds of social groups. This limits the possibility for institutional design that is purely efficiency driven. Instead, organizational change, as one example, can be understood in part as a mimetic process in which the structure of existing institutions is imitated, because it is not possible to discern optimal organizational structures, given the complexity of the situation.<sup>102</sup> As in the case of habit, institutions have prominence in sociological theory and in the new economic sociology. Durkheim's economic sociology focuses on institutions like contracts, price, property, technology, and professional groups. Weber saw the existence of "calculable rules" as a prerequisite for the development of rational economic order. Giddens analyzes rules of conduct and the allocation of resources as structural properties that are drawn from the social contexts in which agents participate and that shape their actions.

3. Structural predispositions of decisions: social networks, organizational structures, and path-dependency. Structural approaches to explaining market behavior show how firm behavior can be understood as a result of the specific position of a firm within the social network of market-players.<sup>103</sup> This approach is directly connected to the problem of uncertainty: "Structures exist and reproduce themselves in part because the information needed to pursue maximization and efficiency is not available. In other words, an individual frequently does not know in advance which option will produce, for example, the highest profits or the lowest costs. In these circumstances, the only tangible guidance available to the actor is that which can be inferred from the patterns and outcomes that emerge from relations among actors."<sup>104</sup> Organizational structures reduce choice by prescribing ways in which to act and thereby defining occupational roles. With regard to path-dependency, past decisions limit the choice-set of future decisions, due to switching-costs and learning-curves, but also sunk-costs, which are not disregarded as prescribed by economic theory. The argument of path-dependency can be used for the understanding of the selection of a specific equilibrium, if multiple equilibrium-points are detectable.<sup>105</sup>

4. Power. Finally, power – that is excluded in equilibrium analysis – structures social relations in the economy. Among the classical sociologists, it was Weber who particularly emphasized that state power, authority relationships in organizations, and market-power are central to the understanding of economic processes. The concept of power also allows the linking of the notion of incomplete information to political economy.<sup>106</sup> Power of ego over alter reduces the possible responses of alter and makes alter's behavior predictable for the strategic considerations of ego. The threat of the use of force reduces the choice set of alter to the alternatives of compliance or resistance.

Habit, institutions, structures, and power can be understood as forms of social embeddedness of economic agents, and economic sociology uses them as variables for explaining economic outcomes. They reduce the choice set of actors and allow for predictable behavior by creating expectations of alter's actions in situations of uncertainty. Orthodox economic models do not reflect upon these social mechanisms but conceptualize economic agents as undersocialized utility maximizers who are disembedded from social relations.<sup>107</sup> Although the sociological critique of the rational-actor model has persistently argued that economic processes are embedded in market societies,<sup>108</sup> the problem of uncertainty provides a systematic starting point from which it becomes possible to understand *why* economic behavior is market driven as well as rule driven, without assuming that actors do not intend to maximize in economic contexts. Moreover, it becomes possible on theoretical grounds to reject the assertion of economics and sociological modernization theories that economic relations become increasingly disembedded with the unfolding of capitalist market societies. The cultural de-regulation of exchange-relationships in market economies creates the uncertainty for actors that in turn gives birth to a functional need for the re-introduction of social devices that reduce the uncertainty actors face. One can argue for a dialectical process in which the market and social structures are antagonistic mechanisms of order that reinforce and negate each other but remain nevertheless interdependent. This might help overcome the danger in sociological accounts of the economy that do not allow an adequate understanding of the dynamics of economic processes, because these emphasize conformity over change.<sup>109</sup> Only if we assume that actors remain confronted with problems of uncertainty and reproduce this uncertainty in their actions continuously can we then see economic processes as open-ended and changing. For this we have to look at the conflicting nature of different institutions, structures, norms, and routines that make choice an integral part of economic action.

Although the sociological critique of economic theory can successfully demonstrate that economic agents do not make optimizing decisions and cannot do so in situations of uncertainty, it has also kept in mind that sociology does not offer an alternative decision theory with general predictive capabilities for the understanding of economic outcomes. It is relatively well understood on a systemic level that the notion of reproduction of economic agents (individuals, firms) can substitute for the optimizing criteria under conditions of uncertainty.<sup>110</sup> This opens the space for an understanding of the possibility of the continued existence of inefficient structures and sub-optimal decision-making,<sup>111</sup> or of the reinterpretation of these deviations as sensible forms of decision-making under informational constraints.<sup>112</sup> However, the proposition, that the economy as a system and its elements can continue to exist despite irrational behavior, does not lead to a theoretical understanding of how actors actually act, but tends to focus on the systemic side of social reproduction. It is also fairly well understood how uncertainty about outcomes influences the decision-making *process*.<sup>113</sup> Concepts like garbage-cans of decision-making and organizational anarchy or incremental decision-making and muddling-through show how intentionally rational decision-makers adapt to uncertainty.<sup>114</sup> But on the level of economic agents, it is not systematically understood how habits, culture, or institutional expectations determine economic performance. Research in economic sociology uses institutional, cultural, or structural variables in comparative studies for explaining specific empirical variances in actor behavior, without attaining results that can be generalized or used to predict economic outcomes.

## Conclusion

This article argues that the problem of uncertainty represents the central limitation of efficiency-based approaches to the explanation and prediction of economic outcomes. The problem of uncertainty reintroduces the Hobbesian problem of order into economics and makes it possible to connect questions of economic decision-making with social theory. The emphasis lies not, as in the behavioral theories of the Carnegie School, in the influence of uncertainty on the actual decision process, but in those social “devices” that actors rely on in decision-making, i.e., that structure the situation for the agents. If agents cannot anticipate the benefits of an investment, optimizing decisions become

impossible, and the question opens up how intentionally rational actors reach decisions under this condition of uncertainty. This provides a systematic starting point for economic sociology. Studies in economic sociology that argue from different theoretical perspectives point to the significance of uncertainty and goal ambiguity. This contribution reflects theoretically why economic sociology can develop a promising approach by building upon these insights. It becomes understandable why culture, power, institutions, social structures, and cognitive processes are important in modern market economies. But it should be equally emphasized that the maximizing paradigm in economics will not be dethroned without a causal theory of the relationship of intentional rationality and social rigidities.

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### Notes

1. See Mark Granovetter, "The strength of weak ties," *American Journal of Sociology* 78 (1973): 1360–1380; Allan Fox, *Beyond Contract* (London: Faber and Faber, 1974); Fred Hirsch, *Social Limits to Growth* (Cambridge: Harvard University Press, 1975); Viviana Zelizer, "Human values and the market: The case of life insurance and death in 19th century America," *American Journal of Sociology* 84 (1979): 591–610.
2. See Mark Granovetter, "Economic action and social structure: The problem of embeddedness," *American Journal of Sociology* 91 (1985): 481–510.
3. See Jack Hirshleifer and John G. Riley, *The Analytics of Uncertainty and Information* (Cambridge: Cambridge University Press, 1992); Mark Machina, "Choice under uncertainty: Problems solved and unsolved," in Cook and Levi, editors, *Beyond Self-Interest* (Chicago: University of Chicago Press, 1990), 90–131. On theories of risk attitudes see M. Rothschild and Joseph. E. Stiglitz, "Equilibrium in

- competitive insurance markets: An essay on the economics of imperfect information,” *Quarterly Journal of Economics* 90 (1976): 629–649. This strategy of economic theory to reinterpret uncertainty as risk gives a very clear indication that uncertainty itself (defined as a situation in which no probabilities can be assigned to outcomes) cannot be incorporated into the maximizing assumption that stands at the core of economics.
4. For the notion of double contingency, see Talcott Parsons and Edward Shils, editors, *Toward a General Theory of Action* (Cambridge: Books on Demand, 1951).
  5. See Kenneth Arrow and Gerald Debreu, “Existence of an equilibrium for a competitive economy,” *Econometrica* 22 (1954): 265–290, and E. Roy Weintraub, *General Equilibrium Theory* (London: Macmillan, 1974).
  6. See Carl Menger, *Grundsätze der Volkswirtschaftslehre* (Wien: Braumüller, 1871).
  7. See Friedrich A. Hayek, *Individualism and Economic Order* (Chicago: University of Chicago Press, 1948).
  8. Frank H. Knight, *Risk, Uncertainty and Profit* (Boston and New York: Kelley, 1921).
  9. Knight, *Risk, Uncertainty and Profit*, 197.
  10. Knight, *Risk, Uncertainty and Profit*, 229.
  11. Knight, *Risk, Uncertainty and Profit*, 268.
  12. This is a widely neglected part of his theory that received appreciation only after the emergence of the new institutional economics. See Oliver Williamson, *The Economic Institutions of Capitalism* (New York: Free Press, 1985).
  13. John Maynard Keynes, *Treatise on Probability* (London: AMS Press, 1973), 34.
  14. See John Maynard Keynes, “The general theory of employment,” *The Collected Writings of J.M. Keynes*, Vol. XIV (London: Cambridge University Press, 1973), 109–123.
  15. In the essay “The general theory of employment” Keynes writes: “By ‘uncertain’ knowledge, let me explain, I do not mean merely to distinguish what is known for certain from what is only probable. The game of roulette is not subject, in this sense, to uncertainty; nor is the prospect of a Victory bond being drawn. Or, again, the expectation of life is only moderately uncertain. Even the weather is only moderately uncertain. The sense in which I am using the term is that in which the prospect of a European war is uncertain, or the price of copper and the rate of interest in twenty years hence, or the obsolescence of a new invention, or the position of private wealth owners in 1970. About these matters there is no scientific basis on which to form any calculable probability whatever. We simply do not know. Nevertheless, the necessity for action and for decision compels us as practical men to do our best to overlook this awkward fact and behave exactly as we should if we had behind us a good Benthamite calculation of a series of prospective advantages and disadvantages, each multiplied by its appropriate probability, waiting to be summed.” (Keynes, “The general theory of employment,” 114).
  16. John Maynard Keynes, *The General Theory of Employment, Interest, and Money* (New York: Harcourt Brace, 1964), 152.
  17. See Keynes, “The general theory of employment,” 114–117.
  18. Keynes, “The general theory of employment,” 114.
  19. Keynes, “The general theory of employment,” 119.
  20. See Weintraub, *General Equilibrium Theory*.
  21. Roger Backhouse, *A History of Modern Economic Analysis* (New York: Blackwell, 1985), 290.

22. See Kenneth Arrow, "The organization of economic activity: Issues pertinent to the choice of market versus nonmarket allocation," *Joint Economic Committee: The Analysis and Evaluation of Public Expenditures: The PPB System* (Washington, DC: Government Printing Office, 1969), 47–64.
23. Moral hazard can be defined as actions of economic agents who maximize "their own utility to the detriment of others, in situations where they do not bear the full consequences or, equivalently, do not enjoy the full benefits of their action due to uncertainty and incomplete or restricted contracts which prevent the assignment of full damages (benefits) to the agent responsible" (Y. Kotowitz, "Moral hazard," *The New Palgrave*, Vol. 3 (1987): 549). An example for moral hazard is the increasing likelihood of fire in buildings for which fire insurance exists. Agency problems are especially pervasive in organizations if the owner or the management (principal) cannot attribute the work result of the employee (agent) to the fulfillment of the contractual agreements in the labor contract. This allows for shirking on the side of the agent. This problem was very effectively put to use in labor economics for the understanding of the stickiness of wages. (See Georg Akerlof, "Gift exchange and efficiency wage theory," *American Economic Review* 74 (1984): 488–500). A classical example for a non-Pareto efficient competitive outcome based on the problem of adverse selection is Akerlof's model of the "market for lemons." (See Georg Akerlof, "The market for 'lemons': Quality uncertainty and the market mechanism," *Quarterly Journal of Economics* 84 (1970): 79–83). This model demonstrates that the asymmetric distribution of information on the quality between sellers and buyers of used cars prevents the existence of a positive equilibrium price in this market. If used cars on the market have different qualities and the potential buyer does not know the quality of the particular car he wants to buy, he will only be willing to pay the price of an average quality car. This encourages sellers with higher-than-average quality cars to withdraw from the market, which lowers the average quality of offered cars. This circle continues so that no cars will be sold at any positive price. The basis for this competitive outcome is the asymmetric information between sellers and buyers, which gives rise to strategic considerations on both sides. Since the sellers of all but the best cars have an interest in not letting the potential buyer know what the actual quality of the car is and the buyer knows this, there will be no disclosure of accurate information. The buyer knows this and the seller knows that the buyer knows. One of the most important ideas that deal with the situation of market failure was developed by Michael Spence with the concept of signaling. Sellers of high-quality commodities will reveal themselves by giving credible market signals like extended warranties or brand names. The theory is based on the assumption that it is cheaper to produce these signals for producers with high-quality goods. (See Michael Spence, "Job market signaling," *Quarterly Journal of Economics* 87 (1973): 355–374).
24. In a game of incomplete information the players do not have all information about the parameters defining the game, i.e., the payoff-functions, strategy options, and the information that each player has.
25. See John C. Harsanyi, "Advances in understanding rational behavior," in Elster, editor, *Rational Choice* (New York: New York University Press, 1986), 82–107.
26. David M. Kreps, *Game Theory and Economic Modeling* (Oxford: Oxford University Press, 1990).
27. Thomas R. Palfrey and Sanjay Srivastava, "Mechanism design with incomplete information: A solution to the implementation problem," *Journal of Political Economy* 97 (1989): 668–691.

28. See Peter Hammond, "Uncertainty," *The New Palgrave*, Vol. 4 (1987): 728–733; Harsanyi, "Advances in understanding rational behavior"; A. Postlewaite, "Asymmetric information," *The New Palgrave*, Vol. 1 (1987): 133–135.
29. See Robert J. Schiller, "Expectations," in *The New Palgrave*, Vol. 2 (1987): 224–229.
30. See Hammond, "Uncertainty."
31. For a theoretical challenge to the use of Bayesian decision theory in game theory see Faruk Gul, "On the Bayesian View in Game Theory and Economics," Research Paper #1991 (Stanford University, 1991).
32. See Akerlof, "The market for 'lemons': Quality uncertainty and the market mechanism"; David M. Kreps, P. Milgrom, J. Roberts, and R. Wilson, "Rational cooperation in the finitely repeated prisoner's dilemma," *Journal of Economic Theory* 27 (1982): 245–252; S. Rosen, "Implicit contracts: A survey," *Journal of Economic Literature* 23 (1985): 1144–1175.
33. Postlewaite, "Asymmetric information," 134.
34. See Oliver Williamson, *Markets and Hierarchies* (New York: Free Press, 1975) and Oliver Williamson, *The Economic Institutions of Capitalism*.
35. In agency theory organizations are nothing more than a series of contracts between parties.
36. An important exception is the work by economic historian Douglas North who explains the emergence of economic institutions through their function in limiting the choice set of actors. Institutions facilitate market exchanges because of the creation of reciprocal expectations and the reduction of contingency. Institutions "reduce uncertainty by creating a stable structure of exchange" (Douglas North, "Institutions and their consequences for economic performance," in Cook and Levi, editors, *The Limits of Rationality* (Chicago: University of Chicago Press, 1990), 394). While Williamson assumes that economic institutions are transaction-cost efficient, this notion is not maintained by North. The interests of the state and path dependency allow for the creation and continued existence of inefficient institutional structures in an economy. For this argument see also Glenn Carroll and Richard Harrison, "On the historical efficiency of competition between organizational populations," *American Journal of Sociology* 100 (1994): 720–749.
37. Hirshleifer and Riley, *The Analytics of Uncertainty and Information*, 10.
38. Equilibrium refinement refers to attempts by economists to eliminate multiple equilibria by distinguishing between plausible and unplausible equilibria. Equilibrium revelation attempts to reduce equilibrium points by changing the design of the mechanisms played by agents so that only desirable equilibria remain.
39. It is interesting to note that economists react outrightly hostile to these earlier notions of uncertainty. Coddington asserts that Keynes's notion of uncertainty in economic decision-making is "... as an analytical issue ... either innocuous or else quite indiscriminately destructive" (A. Coddington, "Deficient foresight: A troublesome theme in Keynesian economics," *American Economic Review* 72 (1982): 480). Hirshleifer and Riley "disregard Knight's distinction, which has proved to be a sterile one" (Hirshleifer and Riley, *The Analytics of Uncertainty and Information*, 10).
40. See Hirshleifer and Riley, *The Analytics of Uncertainty and Information*; Machina, "Choice under uncertainty: Problems solved and unsolved"; Oliver Williamson, "Calculativeness, trust and economic organization," *Journal of Law & Economics* 36 (1993): 453–486.



41. See Daniel Kahnemann, Paul Slovic, and Amos Tversky, editors, *Judgment under Uncertainty, Heuristics and Biases* (Cambridge: Cambridge University Press, 1982).
42. See Backhouse, *A History of Modern Economic Analysis*. However, one notable deviation from the rational-actor assumption is Akerlof's efficiency wage model, which assumes that standards of fairness among workers play a major role in overcoming principal-agent problems of shirking and malfeasance. See Georg Akerlof, "Gift exchange and efficiency-wage theory."
43. See for this point Jon Elster, *Rational Choice* (New York: New York University Press, 1986), 7.
44. See, for instance, Amitai Etzioni, *The Moral Dimension* (New York: Free Press, 1988). This does, of course, not mean that there are only empirical critiques of the economic-actor model. Parsons argued in his early work against this type of critique and demonstrated on theoretical grounds that utilitarian theory can only resolve the problem of order by negating the voluntaristic dimension of action. These critiques are not discussed here because they do not demonstrate that, *under the conditions assumed in General Equilibrium models*, social order (an efficient equilibrium) does not exist. A more ambitious concept of order serves as background to Parsons's critique.
45. For this distinction see Robert Frank, "Rethinking rational choice," in Roger Friedland and A. F. Robertson, editors, *Beyond the Marketplace* (New York: Aldine de Gruyter, 1990), 53–87.
46. Frank, "Rethinking rational choice," 54 f.
47. This distinction and its definition of "rationality" is, of course, based on a decision heuristics and not on sociological factors. It therefore also does not address the problem of how rationality is socially constituted. This important issue lies outside of the distinction.
48. See Amartya Sen, "Rational fools: A critique of the behavioral foundations of economic theory," *Philosophy and Public Affairs* 6 (1977): 317–344.
49. See Elster, *Rational Choice*, 17.
50. Jon Elster, "When rationality fails," in Cook and Levi, editors, *The Limits of Rationality*, (Chicago: Chicago University Press, 1990), 41.
51. See for this especially Daniel Kahneman, Jack L. Knetsch, and Richard Thaler, "Fairness as a constraint on profit seeking: Entitlements in the market," *American Economic Review* 76 (1986): 728–741. For a very interesting attempt to show how to incorporate the findings of psychological studies into a sociological theory of behavior under risk, see Carol A. Heimer, "Social Structure, Psychology, and the Estimation of Risk," *Annual Review of Sociology* 14 (1988): 491–519.
52. This is not the case if it can be shown that the deviation from the rational-choice assumption generates superior results. This in fact undermines rational choice as a normative decision-theory. See for this James March, "Behavior and the concept of preference," in Jon Elster, editor, *Rational Choice* (New York: New York University Press, 1986): 60–81.
53. See Etzioni, *The Moral Dimension*, and Frank, "Rethinking rational choice."
54. See Etzioni, *The Moral Dimension*.
55. See Etzioni, *The Moral Dimension*; Martin Hollis and Wilhelm Vossenkuhl, editors, *Moralische Entscheidung und rationale Wahl* (München: R. Oldenbourg, 1992); Jane J. Mansbridge, editor, *Beyond Self-Interest* (Chicago: University of Chicago Press, 1990); Mancur Olson, *The Logic of Collective Action* (Cambridge: Harvard University Press, 1965).

56. See Emile Durkheim, *The Division of Labor in Society* (New York: Free Press, 1984), and Talcott Parsons, *The Structure of Social Action* (New York: Free Press, 1949).
57. See Robert Axelrod, *The Evolution of Cooperation* (New York: Basic Books, 1984). However, the general claim of game theory to have solved the problem of cooperation has to be rejected. For reasons that cannot be shown here, it can be argued that the problem of cooperation offers a second systematic vantage point for economic sociology. The question would be: "Which social entities put us in a position to act 'irrationally' and make it thereby possible for us to reach superior results?"
58. See Raymond Boudon, "The logic of relative frustration," in Jon Elster, editor, *Rational Choice* (New York: New York University Press, 1986), 171–196 and Samuel Popkin, "The Political Economy of Peasant Society," in Jon Elster, editor, *Rational Choice*, 197–247.
59. I am only talking about economic contexts here. The usefulness of rational-choice theory for the analysis of other social situations has to be considered separately, and in many instances, much more critically. An example at hand is, of course, the work by Gary Becker.
60. See Niklas Luhmann, *Die Wirtschaft der Gesellschaft* (Frankfurt: Suhrkamp, 1988), 119.
61. For this point see Ronald Heiner, "The origin of predictable behavior," *The American Economic Review* 73 (1983): 560–595.
62. The importance of this point can be seen in two remarks from rational-choice theorists who point to the problem of uncertainty as the Achilles-heel of economic theory: "Assuming that we are facing a choice under uncertainty, does rational-choice theory tell us anything about what we ought to do? The answer is: very little" (Jon Elster, *Rational Choice*, 6). In a similar vein, economist Charles Schultze points to the crucial status of the assumption for economic theory that actors can act rationally: "When you dig deep down, economists are scared to death of being sociologists. The one great thing we have going for us is the premise that individuals act rationally in trying to satisfy their preferences. That is an incredibly powerful tool, because you can model it" (Charles Schultze, cit. from Robert Kuttner, "The poverty of economics," *The Atlantic Monthly*, February (1985): 76).
63. This leads also to definitions of uncertainty that form the category of risk in Frank Knight's definition. See for instance M. Hashem Pesaran, *The Limits to Rational Expectations* (Oxford: Blackwell, 1987) and Hirshleifer and Riley, *The Analytics of Uncertainty and Information*.
64. This shall not be understood in a deterministic sense. Ethnomethodology demonstrated already in the 1960s that actors cannot determine their actions solely based on internalized norms. Herbert Garfinkel in particular showed the necessity for continued creativity on the part of actors for the continuation of action sequences. The orientation on "social mechanisms" is meant in a weak sense that is not intended to negate the intentional aspect of action.
65. Heiner, "The origin of predictable behavior," 564.
66. Heiner, "The origin of predictable behavior," 565.
67. This would also provide an explanation of why, in contrast to the assumptions of modernization theory, modern economies are continuously socially embedded. We would hypothesize that in market societies, in which gain is a legitimate motif for economic transactions, institutions that hinder the realization of this orien-

tation (for instance redistribution due to obligations) come under increased pressure. At the same time the demolishing of social institutions for the regulation of economic activities creates sources of uncertainty which produce in turn a need for renewed institutional guidance. With Giddens we could speak of “manufactured uncertainty” (Anthony Giddens, “Living in a post-traditional society,” in Beck, Giddens, Lash, *Reflexive Modernization* (Stanford: Stanford University Press: 1994), 56–109). But, in contrast to Giddens, this uncertainty would not be the result of increasing institutional reflexivity, but of competing institutional rationalities in modern societies.

68. See Herbert Simon, *Administrative Behavior* (New York: Macmillan, 1945).
69. Simon, *Administrative Behavior*, 108.
70. See William Riker and Peter C. Ordeshook, *An Introduction to Positive Political Theory*, (Englewood Cliffs: Prentice-Hall, 1973).
71. See Herbert Simon, editor, *Economics, Bounded Rationality and the Cognitive Revolution*, (Brookfield: Ashgate Publishing, 1992).
72. See Geoff Hodgson, “The rationalist conception of action,” *Journal of Economic Issues* XIX (1985): 825–851.
73. See for this point especially the work by Kahnemann and colleagues. Kahnemen, Knetsch and Thaler, “Fairness as a constraint on profit seeking: Entitlements in the market.”
74. See Geoff Hodgson, *Economics and Institutions* (Cambridge: Ashgate Publishing, 1988).
75. Hodgson, “The rationalist conception of action,” 826.
76. Hodgson, “The rationalist conception of action,” 842.
77. See John W. Murphy, “Reason, bounded rationality, and the lebenswelt,” *American Journal of Economics and Sociology* 51 (1992): 293–304.
78. One of the best formulations of this point goes back to Niklas Luhmann and his critique of Weber’s theory of bureaucracy. See Niklas Luhmann, *Zweckbegriff und Systemrationalität. Über die Funktion von Zwecken in sozialen Systemen* (Tübingen: Mohr, 1968).
79. See for this type of differentiation between sociology and economics Vilfredo Pareto, *The Mind and Society* (New York: AMS Press, 1935) and Paul Samuelson, *Foundations of Economic Analysis* (Cambridge: Harvard University Press, 1947).
80. This argues of course also contrary to Parsons’s distinction between economics and sociology. (See Parsons, *The Structure of Social Action*). Parsons saw the role of sociology in the determination of ultimate ends while economics dealt with the means-ends relationship under the assumption of maximizing behavior. This analytical distinction allowed Parsons to accept orthodox economics on the one hand and to define a systematic role for sociology in the action frame of reference on the other.
81. See Albert O. Hirschman, *The Passions and the Interests* (Princeton: Princeton University Press, 1977).
82. Mark Gould, “Parsons’ economic sociology: A failure of will,” *Sociological Inquiry* 61 (1991): 89–101.
83. I am not using the term utilitarianism, although the critique of classical sociology against rational-actor models was directed mainly against utilitarian social theory. Charles Camic has shown convincingly that the interpretation of utilitarian theory in sociology is severely flawed and neglects important aspects of the actual writings of authors like Hume, Smith, Bentham, and Mill (Charles Camic, “The

- utilitarians revisited,” *American Journal of Sociology* 85 (1979): 516–550). In contrast to the sociological opinion, the utilitarian interpretation of social order is far less based solely on atomistic and egoistic individuals. Despite this reinterpretation, the sociological critique can very well be maintained against the parsimonious assumptions of General Equilibrium Analysis.
84. With the exception of Spencer and the recent rational-choice approach in sociology, one can look at the history of sociological thought from Comte to Habermas from the perspective that they jointly reject the possibility of the emergence of a stable social order based solely on self-interest.
  85. See Peter Wagner, “Science of society lost: On the failure to establish sociology in Europe during the ‘Classical’ period,” in Wagner, Wittrock, Whitley, editors, *Discourses on Society XV* (1990): 219–245.
  86. See Simon Clarke, *Marx, Marginalism and Modern Sociology*, 2nd edition (London: Macmillan, 1991).
  87. See Clarke, *Marx, Marginalism and Modern Sociology*, and Norbert Reuter, *Der Institutionalismus* (Marburg: Metropolis, 1994).
  88. Spiro Latsis, “Situational determinism in economics,” *British Journal of Philosophy of Science* 23 (1972): 207–245. It has repeatedly been observed that economic theory is designed in a way that allows for only one choice: the utility one assigns to a good or a service. See Brain Loasby, *Choice Complexity and Ignorance: An Enquiry into Economic Theory and the Practice of Decision Making* (Cambridge: Books on Demand, 1976). Once preferences are determined, actors rely on a pre-written script for their market exchanges, which is determined by the utility function and the optimizing goal. Firms do not have any freedom of choice because the goal of profit-maximization determines their production function and consequently their factor demand and the quantity of output. Spiro Latsis called this lack of choice in economics “situational determinism.”
  89. As an example: If an employer does not have complete knowledge about an employee’s work, the pay cannot – or only coincidentally – equal the marginal product. This leads to the problem of controlling the worker and to the introduction of negative sanctions or positive incentives for the worker not to shirk. If, as assumed in the concept of uncertainty, the pay-off for an investment in control cannot be determined ex ante, it becomes impossible to integrate principal-agent problems simply in a rational-choice framework by adding control costs to the marginal costs of the product.
  90. In the course of the development of sociological theory, sociology retreated more and more from dealing with the realm of the economy and theory development occurred independent from economics. At the same time, the problem of order remained as a central aspect of micro- and macro-sociological theory.
  91. See Parsons and Shils, editors, *Toward a General Theory of Action*.
  92. See for instance Harsanyi, *Advances in Understanding Rational Behavior*.
  93. Parsons and Shils, *Toward a General Theory of Action*, 16.
  94. See Charles Camic, “The matter of habit,” *American Journal of Sociology* 91 (1986): 1039–1087.
  95. See Knight, *Risk, Uncertainty and Profit*; Keynes, “The general theory of employment”; Simon, *Administrative Behavior*.
  96. See for instance Sharon Zukin and Paul DiMaggio, editors, *Structures of Capital: The Social Organization of the Economy* (Cambridge: Cambridge University Press: 1990).
  97. See Durkheim, *The Division of Labor in Society*.

98. Max Weber, *Economy and Society* (Berkeley: University of California Press, 1978), 64.
99. Anthony Giddens, *The Constitution of Society* (Berkeley and Los Angeles: University of California Press, 1984), 64.
100. See Hodgson, *Economics and Institutions*.
101. See especially North, "Institutions and their consequences for economic performance," and Williamson, *The Economic Institutions of Capitalism*.
102. See Paul DiMaggio and Walter Powell, "The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields," *American Sociological Review* 48 (1983): 147–160.
103. See Harrison White, "Where do markets come from?," *American Journal of Sociology* 87 (1981): 517–547; and Ronald Burt, *Structural Holes. The Social Structure of Competition* (Cambridge: Harvard University Press, 1992). John Padgett and Christopher Ansell show, in a fascinating article on the rise of the Medici in Renaissance Florence, the importance of social networks for state building processes. Planning and self-interest cannot explain the power exercised by Cosimo de' Medici, but his structural position within Florentine elite networks can explain this (John F. Padgett and Christopher K. Ansell, "Robust action and the rise of the Medici, 1400–1434," in *American Journal of Sociology* 98 (1994): 1259–1319). Besides network approaches, rational-choice theory also points to the importance of social structures for the explanation of outcomes. This trait is especially strong in the work by James Coleman. See James Coleman, *Foundations of Social Theory*, (Cambridge: Harvard University Press, 1990). However, social structures differ from the other mentioned devices in being consistent with the pursuit of calculative rationality by all agents. This, among many other helpful points, was brought to my attention by Paul DiMaggio.
104. Eric M. Leifer and Harrison White, "A structural approach to markets," in Mark Mizruchi and Michael Schwartz, editors, *Interorganizational Relations* (Cambridge: Cambridge University Press, 1986), 85–108.
105. See Paul David, "Understanding the economics of Poverty: The necessity of history," in William N. Parker, editor, *Economic History and the Modern Economist* (London: Blackwell, 1986), 30–49.
106. See Samuel Bowles, "The production process in a competitive economy: Walrasian, neo-Hobbesian, and Marxian models," *American Economic Review*, 75 (1985): 16–36.
107. See Granovetter, "Economic action and social structure: The problem of embeddedness."
108. Besides the article by Granovetter, see as a classic statement of this position Polanyi, *The Great Transformation*.
109. See Paul DiMaggio, "Interest and agency in institutional theory," in Lynne Zucker, editor, *Institutional Patterns and Organizations* (Cambridge: Ballinger, 1988), 3–22; Anthony Oberschall and Eric M. Leifer, "Efficiency and social institutions: Uses and misuses of economic reasoning in sociology," *American Review of Sociology* 12 (1986): 233–253.
110. See for this point Leifer and White, "A structural approach to markets"; Luhmann, *Die Wirtschaft der Gesellschaft*; March, "Behavior and the concept of preference"; Oberschall and Leifer, "Efficiency and social institutions: Uses and misuses of economic reasoning in sociology."
111. See Marshall Meyer and Lynne Zucker, *Permanently Failing Organizations*, (Huntington Park: Sage, 1988).

112. See Heiner, "The origin of predictable behavior," and March, "Behavior and the concept of preference."
113. See March, "Behavior and the concept of preference."
114. See Charles Lindblom, "The science of 'muddling through'," *Public Administration Review* 2 (1959): 79–88, and James March and Johan Olson, *Ambiguity and Choice in Organizations* (Bergen: Oxford University Press, 1979).