Rational Choice Theory and Empirical Research: Methodological and Theoretical Contributions in Europe

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Abstract

Rational choice theory (RCT) constitutes a major approach of sociological theorizing and research in Europe. We review key methodological and theoretical contributions that have arisen from the increasing empirical application of RCT and have the potential to stimulate the development of RCT and sociology more generally. Methodologically, discussions have evolved around how to test RCT empirically and how to realize its ambition to give theory-guidance to social research. These discussions have identified the strengths and shortcomings of direct and indirect test strategies using survey or experimental data. Metatheoretically, different views have emerged about how to deal with counterevidence from applied fields of sociological research. Whereas some argue for a wide version of RCT that allows a broad set of auxiliary assumptions about preferences, expectations, and constraints, others advocate a major overhaul of RCT's core assumptions by incorporating additional concepts and mechanisms.

INTRODUCTION

Over the past few decades, rational choice theory (RCT) has made its way into empirical research in many core sociological fields, such as economic sociology, political sociology, social inequality and stratification, migration and integration, the sociology of the family, crime and deviance, and the sociology of religion (for overviews see Hechter & Kanazawa 1997, Hedström & Stern 2008, Voss & Abraham 2000, Wittek et al. 2012). One can fairly say that RCT has significantly influenced the mainstream in these diverse fields and has successfully contributed to resolving key substantive questions. Above all, it has been increasingly used to replace mainly variable-driven empirical analyses with more theory-driven approaches that explicitly address the causal mechanisms underlying observable correlations. In light of this progress, scholars have called for further strengthening of the alliance between RCT and survey data analysis (Blossfeld & Prein 1998, Goldthorpe 1996) or experimental research (Buskens & Raub 2012, Fehr & Gintis 2007).

The growing prominence of RCT in empirical research, however, is not always seen as a success story; it is accompanied by a continuing, widely held skepticism about its aspiration to constitute a general, empirically meaningful sociological theory. On the one hand, scholars question whether the principles of RCT can be appropriately tested at all and whether RCT really allows researchers to derive interesting hypotheses with regard to substantive fields of application (Bunge 1996, Green & Shapiro 1994, Mood 2009, Smelser 1992). On the other hand, there are doubts about the comprehensiveness of the approach: Though many results of empirical research in applied fields are well in line with RCT, genuine rational choice explanations apparently often cannot account for the full story, and some findings even seem to question core assumptions of RCT (Boudon 2003, Elster 2007, Esser 2009, Lindenberg 2008).

The origins of these opposing impressions ultimately lie in basic methodological and metatheoretical challenges. Methodologically, the interplay between RCT and social research is by no means straightforward. In confronting rational choice explanations with empirical evidence in fields of sociological research, scholars have employed different test strategies, the feasibility and conclusiveness of which are controversial topics of ongoing discussion. More fundamentally, like any other general theory RCT can be tested only after additional, auxiliary assumptions have been introduced. Its key concepts—available alternatives, expectations, and costs and benefits—require detailed specification before testable hypotheses can be derived. The question then is how to arrive at these auxiliary assumptions, the answer to which has important implications for RCT's ambition to give theory-guidance to social research. Metatheoretically, a similarly fundamental problem pertains to the kinds of additional assumptions that are possible and reasonable within the limits of RCT in the attempt to bring explanations in line with empirical evidence. Here, RCT faces the well-known trade-off between empirical content (falsifiability) and corroboration of a theory. Undoubtedly, the growing use of RCT in empirical research results from its appealing comparative advantage of allowing a wide range of precise hypotheses to be derived from a comparatively limited set of explanatory factors and assumptions (cf. Hedström & Udehn 2009, pp. 27ff.). But there is also no doubt that the widely shared skepticism toward RCT is because the most genuine derivations are too often easily rejected in core areas of sociological interest. The metatheoretical question is how to deal with the apparent counterevidence that stems from applied fields of sociological research: Is it possible to provide explanations of this evidence within RCT by widening its core assumptions and thereby broadening the set of allowed auxiliary assumptions (Opp 1999)? Or does RCT have to be enriched (and if so, how?) by integrating concepts and mechanisms of other sociological approaches for it to remain a reasonable workhorse and starting point for applied sociological research (Boudon 2003, Elster 2007, Esser 2009, Lindenberg 2008)?

A quite vivid discussion has surrounded these problems and questions in recent years. A significant number of contributions have been made in European sociology, where RCT constitutes a major approach to sociological theorizing and research (cf. Buskens 2000, Diekmann & Voss 2004, Edling & Stern 2003, Goldthorpe 1998). So far, however, this literature is only partly accessible to the international scientific community, which is often unfamiliar with the wider context of specific discussions.

In this article, we therefore review some important debates and advancements, concentrating mostly (although not always solely) on European contributions. First, we begin with the methodological discussion, focusing on the general relationship between RCT and empirical research. We then summarize and assess views on how RCT can or should be tested with empirical data and how RCT can or should provide theory-guidance for social research. Next, we turn to the metatheoretical discussions indicated above. They refer to the questions of how narrow or wide the general assumptions underlying RCT can or should be in order to make it suitable for sociological research and whether and how concepts from other sociological approaches must or can be integrated to make further substantive progress in diverse fields of application. We close with some general perspectives arising from these discussions.

METHODOLOGICAL CHALLENGES AND ADVANCEMENTS

To fully understand the significance of the methodological discussions surrounding RCT, it is useful to remember the wider scientific mission that RCT set out to serve. The main roots of this mission lie in Popper's (1959) critical rationalism and the deductive-nomological model of explanation (Hempel & Oppenheim 1948), although RCT is likewise compatible with more modern, mechanism-based accounts of explanation (cf. Hedström & Ylikoski 2010, Opp 2005). The program strives for theories with high empirical content that exhibit great generality yet have specific implications (Homans 1967). Causal relationships of law-like generality are assumed to exist only at the level of the individual, that is, in the form of a theory of action. Together with the desire to attain a deeper causal understanding of social phenomena, this leads to methodological individualism, as illustrated by the well-known macro-micro-macro scheme: Explanation in the social sciences entails understanding how situations influence actors and how their behavior in turn gives rise to the collective phenomena of interest (Coleman 1990, Wippler & Lindenberg 1987). As the theory of action causally links these transitions between macro and micro levels of analysis, it must be precise enough to enable models of social mechanisms to be constructed. In this respect especially, one can argue that RCT has a comparative advantage, as evinced by its models of exchange, markets, organizations, networks, and strategic interaction. Analytical precision is also a prerequisite for the systematic derivation of hypotheses and, hence, for empirical testing, which can lead to confirmation, refinement, or ultimately refutation of a given theory. The metatheoretical ideals on which RCT is based assign a crucial role to empirical social research, demanding empirical controls of theory construction as well as the theory-guidance of empirical research. Traditionally, proponents of RCT thus explicitly turn against other sociological approaches that develop only vague concepts and propositions that are hardly empirically accessible (see Homans 1967, pp. 10ff) and against research that attempts only to statistically explain variance without strong theoretical foundations (Esser 1996, Goldthorpe 1996).

Among the great challenges deriving from these ambitious aims and principles, two issues have received particular attention in European RCT: First, addressing the aspect of empirically controlled theory construction, researchers have elaborated and critically discussed different strategies for testing sociological rational choice models. Second, referring to the aspect of theory-guidance, scholars have discussed how to arrive from

RCT, as a very general theory of individual behavior, at more specific theoretical models and hypotheses for given fields of application. As will become clear, these discussions have produced insights that are not confined to RCT but are relevant to any attempt to apply general theories in social research.

Empirical Control of Rational Choice Theory: Direct and Indirect Test Strategies

Leaving important differentiations within RCT aside for the moment (see Goldthorpe 1998), one can roughly characterize the approach by its view of individual behavior: RCT assumes that actors consider the costs and benefits of available alternatives, form expectations about the consequences of these alternatives, and choose the alternative that best satisfies their preferences. Making rational choices requires actors at least to have consistent preferences, and several axiomatic decision theories precisely specify the requirements that these preferences must satisfy (e.g., completeness and transitivity) before a utility function can be constructed (starting with von Neumann & Morgenstern 1947). Considerable experimental research has demonstrated systematic violations of consistency requirements and has given rise to further refinements as well as alternative theoretical frameworks (for an overview, see Rieskamp et al. 2006). However, this close dialogue between theory construction and experimental tests in the field of decision theory is relatively far removed from applications of RCT in sociological research, due mainly to different substantive interests (Hechter & Kanazawa 1997). In sociological RCT, major methodological discussions have centered on two different strategies of applying and testing it: one direct and one indirect.

The direct test strategy tries to measure expectations and perceived costs and benefits within survey studies. Most often, rating scales are used to capture the subjective evaluation of each relevant consequence and its subjective probability of occurrence (e.g., Matsueda et al. 2006). To gauge expectations, respondents are asked how likely it is that particular actions will lead to particular outcomes. Examples include the likelihood that political participation will change a country's political or economic situation (Opp et al. 1995) or the likelihood of getting caught when trying to steal something from a shop (Kroneberg et al. 2010a). To measure perceived costs or benefits, respondents are asked to rate how important, or how good or bad, particular outcomes would be for them. The resulting indicators are then analyzed using multivariate statistical analyses.

Critics within RCT have argued that measuring expected utility by means of rating scales is a brute force method, as it often involves untested and questionable assumptions (Braun & Franzen 1995, Dahlbäck 2003, Diekmann & Preisendörfer 1993). This critical assessment is based on a comparison with the abovementioned tradition of axiomatic measurement theories. Indeed, the use of rating scales in surveys implies engaging in interpersonal comparisons of utility, assumes at least interval scale measurement, and does not even allow detection of intransitive or incomplete preferences. Opp (1998) has countered this criticism by arguing that axiomatic measurements of utility are problematic in their own right and are often impractical to carry out. Moreover, in applications of RCT using survey research, the goal is not to construct individual utility functions but to test the average impact of perceived costs and benefits and expectations on behavior (and the extent to which these variables mediate the impact of other attributes of a respondent's social situation). Thus, in survey research the best compromise in terms of feasibility and substantive interests might be to use rating scales to measure utility and expectations (Opp 1998), similar to procedures employed in research on attitudes or values. It should be noted, however, that this implies a shift from axiomatic expected utility theories to the analytically less rigorous family of expectancy-value theories of motivation (e.g., Ajzen 2012).

Two other problems of the direct test strategy are less controversial. First, it is

often unfeasible, as direct measures are hardly available in large-scale secondary data sources. Second, one can argue that subjective perceptions are of minor sociological interest and that the direct test strategy distracts our attention from the more important analysis of an actor's objective situation (Goldthorpe 1998). Both arguments are major motivations for the indirect strategy of testing rational choice models.

The indirect test strategy refrains from attempts to measure expectations and preferences. Proponents argue that doing so is unnecessary, as RCT allows construction of mathematical models from which a great number of empirical implications can be derived (Voss & Abraham 2000, p. 57). As is common practice in economics, these models are then tested indirectly by focusing on more easily observable attributes of individuals, situations, groups, or societies (see, e.g., Breen & Cooke 2005, Brüderl & Kalter 2001). Thus, the indirect test strategy depends heavily on so-called bridge assumptions, which assume that expectations, preferences, and perceived alternatives systematically vary with more objective factors (Esser 1998; Wippler & Lindenberg 1987, p. 145). In doing so, these assumptions bridge the distance between the social situation and the immediate determinants of behavior at the level of the individual actor—the first step in the macro-micro-macro scheme. For example, in the study of public goods provision, group size is often assumed to be negatively related to the subjective expectation of influence (Sandell & Stern 1998). In the same fashion, married couples with children may perceive greater costs of divorce (Brüderl & Kalter 2001), or persons who are more successful in education and the labor market may perceive greater potential costs of illegal acts because they have more to lose from being convicted (Matsueda et al. 2006, p. 101–2). In the indirect strategy, measurement is confined to the behavior of interest and other objective factors, such as group size, family type, or social class.

The advantage of the indirect test strategy is that these and similar factors are relatively easy to measure and of intrinsic sociological interest. The major challenge is the reduced conclusiveness of the tests that accompanies this greater dependency on bridge assumptions. Empirical analyses always test a combination of the theoretical model and the set of bridge assumptions, and it is in principle always possible to blame and modify the latter if a test fails to confirm theoretical expectations. Although these practical limitations of falsifiability are a known general feature of empirical testing (Popper 1959), the problem is clearly amplified the more a test strategy relies on auxiliary assumptions.

Another multifaceted problem of the indirect test strategy concerns theoretical ambiguity. First, some objective factors presumably affect several parameters of actors' cost-benefit calculus, sometimes even parameters that work in opposite directions. For example, one can argue that persons with greater income perceive both greater costs of being convicted of tax fraud and greater potential savings through tax fraud. It is therefore difficult to clearly predict the effect of income on tax fraud. Second, the indirect test strategy often involves testing hypotheses that likewise are consistent with theories other than RCT. It is difficult to derive hypotheses that concern the relationship between the behavior of interest and variables such as age, education, or social class and are at the same time specific to RCT. This allows critics to argue that "some of the studies purporting to find evidence favoring rational choice theory actually test models that are indistinguishable from other, supposedly nonrational choice theories" (Akers & Sellers 2009, p. 30).

Rather than argue for the adoption of either the direct or the indirect test strategy, we support the application of both strategies in sociological fields of research, thereby benefiting from their respective strengths. As a good example, consider the sociology of education, in which European RCT has been particularly prolific over the past decade (for earlier, seminal contributions, see Boudon 1974, Gambetta 1987). Much research was inspired by Breen & Goldthorpe's (1997) model of educational decisions, primarily constructed to explain the resilient social class differences in educational

participation rates in developed countries over the twentieth century despite increasing overall participation rates (see also Erikson & Jonsson 1996; Esser 1999, pp. 265–75). The Breen-Goldthorpe model assumes that families want their children to achieve a level of education that will allow them to attain a class position at least equal to their parents'. The model then identifies conditions under which this mechanism alone suffices to produce the social class differences in educational participation rates. Additionally, educational decisions are assumed to follow students' own subjective beliefs about their likelihood of succeeding in education and their command of resources to meet its costs. In their original article, Breen & Goldthorpe (1997) mathematically deduced implications of their model and compared these with empirical evidence produced by previous research. However, subsequent research has gone to great lengths to test the model's motivational assumptions and behavioral implications more directly (Becker 2003, Breen & Yaish 2006, Davies et al. 2002, Gabay-Egozi et al. 2010, Holm & Jæger 2008, Need & de Jong 2001, Stocké 2007, Van de Werfhorst & Hofstede 2007). Two comprehensive applications of the direct test strategy collected data on the subjective benefits, costs, and expectations deemed relevant in the model (Gabay-Egozi et al. 2010, Stocké 2007). Remarkably, both of these studies showed that although most of these measures have the theoretically expected impact on educational choices, they cannot fully account for the class differences in these choices. Proponents of the indirect test strategy might regard this as a sign of failure of the strategy to directly measure utility and expectations. Alternatively, one could perceive these results as indicative of the need for theoretical revisions and expansions. Along these lines, some have more recently proposed to incorporate peer-group influences (Jæger 2007) or, more generally, social interaction into rational choice models of educational decisions (Manzo 2013). Although early evidence supports such extensions, full-blown applications of the direct test strategy (e.g., using data both on perceived costs and benefits and on networks) might again help to assess their empirical validity and their relevance in accounting for class differentials. In this way, a back-and-forth between theoretical modeling and the employment of both indirect and direct test strategies can yield cumulative progress in applied fields of sociological research.

Testing Rational Choice Theory in Experimental Research

Our discussion of the direct and indirect test strategies has centered on sociological applications of RCT using survey research. Laboratory experiments provide an important additional avenue of empirically controlled theory construction within RCT (Camerer et al. 2004). A particularly powerful research strategy uses lab experiments to test and refine game-theoretic models (Buskens & Raub 2012). This coupling is particularly worthwhile, as game theory focuses on the strategic interdependencies among actors and lab experiments allow observation and analyses of social interactions (Fehr & Gintis 2007). It therefore becomes possible to overcome a central limitation of survey research based on random samples: the neglect of social interaction processes and the collective phenomena to which they give rise (the micro-macro transition). Moreover, experiments can get around the theoretical ambiguity problems of the indirect test strategy using survey data, as experimental treatments can be carefully designed to differentiate between different aspects of actors' situations and to disentangle different mechanisms. For example, considerable progress has been made in the study of trust games (Buskens & Raub 2012), a generic type of social situation in which one actor can decide whether or not to trust another actor, who, in the case of placement of trust, can honor or abuse the trust placed (Buskens 2002, Snijders 1996). Experiments have been designed to disentangle control and learning mechanisms through which the embeddedness of actors in dyadic relationships or networks affects trust (Buskens & Raub

2002). In the case of control, these relationships help to establish trust through the possibility of applying social sanctions conditional on a trustee's behavior. In the case of learning, social embeddedness helps to obtain information on a trustee's behavior in past interactions and therefore allows formation of more accurate beliefs about his trustworthiness.

Theoretically, analyses of such strategic situations usually employ game-theoretic equilibrium concepts that entail rather strict rationality assumptions. This allows for great deductive power, as empirically testable hypotheses about the equilibrium behavior of rational actors, the characteristics of collective outcomes, and the impact of varying social conditions can be derived analytically. In an attempt to increase realism, the traditional assumption that actors are selfish is being increasingly replaced by models that incorporate other-regarding preferences, such as reciprocity or inequality aversion (Fehr & Gintis 2007). More fundamentally, some scholars suggest abandoning traditional game-theoretic equilibrium concepts in favor of models of backward-looking adaptive behavior (Macy & Flache 2002) or evolutionary game theory (Breen 2009).

In general, there is the well-known trade-off between the power of experiments, in terms of drawing causal inferences, and their questionable external validity, which largely comes from placing university students in rather abstract artificial situations. The combination of game-theoretic models with lab experiments seems most powerful if the aim is to test general propositions about social order, social norms, trust, and similar generic phenomena. In more applied fields of sociological research, one often has to rely instead on the indirect or direct test strategy using survey data. However, narrowing the gap between these research strategies—by collecting data on social structures and processes and by employing models of interaction dynamics outside the laboratory—is a daunting task (Ermisch & Gambetta 2010, Fehr et al. 2002). Important developments in this direction are actor-oriented statistical models for the coevolution of networks and behavior (Snijders 2001) and attempts to calibrate agent-based models empirically using survey and other data (Hedström 2005).

To some extent, it seems justified to think of these different research strategies as complementary. Depending on available data and research interests, some studies will directly test assumptions of RCTs, whereas others will assume them to be true in order to then systematically derive hypotheses about social conditions. Notwithstanding such a division of labor, the competition among these research strategies will continue to help identify their respective strengths and shortcomings. Regardless of which strategies researchers come to favor in their substantive fields of application, the methodological efforts and discussions in RCT may allow them to make more informed and methodologically justified choices. In addition to the close dialogue between theoretical models and empirical research, this increased methodological awareness is another important benefit accruing from the metatheoretical principles to which RCT subscribes.

Rational Choice Theory and the Question of Theory-Guidance

The discussions described so far center around how to test a given rational choice model empirically. A more fundamental question is how to arrive at such a theoretical model in the first place. When building rational choice models, two classes of assumptions have to be made about actors' preferences, beliefs, and constraints. As introduced in our discussion of the indirect test strategy, so-called bridge assumptions describe how an actor's social situation impacts these determinants of behavior. Even before that, however, one has to specify which preferences, beliefs, and constraints are relevant. These auxiliary assumptions about initial conditions have likewise been called bridge assumptions, as they bridge the distance between RCT's general core assumptions and the more specific application (Lindenberg 1996a). However, to distinguish between the two, we refer to these as auxiliary assumptions

(Brüderl 2004, p. 172). Although introducing such auxiliary assumptions is a major step in any application of RCT, little systematic attention used to be devoted to their sources. This changed when they became the subject of another methodological discussion within European RCT. Its central question was the extent to which these auxiliary assumptions could and needed to be derived from general theories (Kelle & Lüdemann 1995, 1996; Lindenberg 1996a,b; Opp & Friedrichs 1996).

Lindenberg argued that the ambition of RCT to give theory-guidance to empirical research could be realized only if researchers went beyond introducing auxiliary assumptions in an ad hoc fashion. Focusing on assumptions about preferences, Lindenberg (1996a) put forward his social production function (SPF) theory, suggesting that it would allow derivation of actors' relevant preferences in applications of RCT. The crucial idea behind SPF theory is to explain the diversity and change of empirically observable preferences by reference to more fundamental stable preferences and changing constraints as already suggested by Stigler & Becker 1977). SPF theory states that human beings strive for two universal goals: physical well-being and social approval. It is further assumed that the right mix of comfort and stimulation/activation produces physical well-being, whereas social well-being is a function of status, behavioral confirmation, and affection. By virtue of these explicit definitions of universal and instrumental goals, SPF theory can apply microeconomic price theory to analyze substitution among instrumental goals according to cost-benefit considerations. Consider the example of a man who retires or becomes unemployed. He will be less able to produce social well-being through status and can therefore be expected to invest increasingly in (i.e., come to prefer) activities that produce behavioral confirmation or affection. In this way, SPF theory explains changes in preferences. Likewise, SPF theory can guide applications in identifying actors' relevant preferences: It suggests asking how the actors are most effectively able to realize physical and social well-being within the set of resources and restrictions they face.

However, critics of SPF theory doubt that its use will yield a considerable gain in terms of theory-guidance (Kelle & Lüdemann 1995, 1996; Opp & Friedrichs 1996; Stachura 2009). Among other things, one can dispute its assumptions about universal and instrumental goals, and it might not be possible to precisely specify production functions, including relationships of substitutability. Thus, SPF theory's attempt to avoid ad hoc assumptions about preferences leads to other types of questionable assumptions.

It seems that, for the time being, researchers will be unable to derive the necessary auxiliary assumptions about actors' preferences, beliefs, and constraints from an empirically confirmed general theory. Rather, in building rational choice models and explanations, they will have to turn to a combination of substantive background knowledge, qualitative pretests, and orientating heuristic principles. In this heuristic, weaker sense, SPF theory can be of great value, and it has already informed a considerable number of applications (e.g., Huinink 2005, Kalter & Granato 2002, Nauck 2005, Nieboer et al. 1998). Subscribing to the old idea that there is a uniform human nature (Voss & Abraham 2000, pp. 50–51), SPF theory directs attention to the varying social conditions under which actors try to optimize their achievement of universal goals. It perceives societies, institutional orders, or cultural milieus as hierarchies of social production functions that define the legitimate means by which actors can achieve physical and social well-being. Depending on their resources and restrictions, actors will invest in one or the other social production function. For example, immigrants will pursue a career in the mainstream labor market or in an ethnic enclave economy, depending on their mix of human, economic, cultural, and social capital and on possible discrimination (Nee & Sanders 2001). Indeed, SPF theory allows a more precise derivation of the main tenets of assimilation theory in the sociology of migration (Kalter & Granato 2002). Applying SPF theory in such a

heuristic fashion does not require subscription to its more specific, questionable assumptions about the hierarchy of human goals. Thus, aside from its overly ambitious methodological aims, SPF theory constitutes an important framework for sociological RCT.

METATHEORETICAL DEVELOPMENTS: TRANSFORMATIONS OF RATIONAL CHOICE THEORY

The challenges and advancements discussed so far concern the methodological questions of how to test RCT empirically and how to arrive at the necessary auxiliary assumptions regarding preferences, expectations, and constraints. However, the application of RCT in fields of sociological research has also led to more fundamental challenges that call into question the theoretical core of the approach (Boudon 2003, Elster 2007, Esser 2009, Lindenberg 2008). This core consists of a specific view of individual behavior that holds together the great variety of rational choice models and establishes its identity as a specific approach to the social sciences. In a minimal way, this view can be characterized by the following three assumptions (cf. Fehr & Gintis 2007, p. 46; Opp 1999, p. 173; Voss & Abraham 2000, pp. 54ff.): (A1) Behavior is to be explained as a selection from among alternatives; (A2) actors' (consistent) preferences, beliefs, and constraints are major determinants of their behavior; (A3) actors choose an alternative that is optimal in terms of their preferences, given their beliefs and the constraints they face.

In addition, many proponents and observers include postulates such as self-regard, consequentialism, time consistency, or optimal belief formation among the core assumptions of the approach. RCT then approximates the model of man known as *Homo economicus*: (A4) Actors are optimally informed rational egoists who care only for the tangible consequences of their actions and take into account only objective constraints. However, the application of RCT to an increasing number of research areas has clearly demonstrated the empirical inadequacy of this set of restrictive assumptions. This evidence has led advocates of RCT to embrace a wide version of the approach, which drops A4 and allows for a greater range of preferences, expectations, and constraints. Alongside this metatheoretical response, a second line of scholarship has argued for a more fundamental overhaul of RCT's core assumptions that goes beyond the view of behavior as being rooted solely in maximizing expected utility under constraints. Here, the idea is to enrich RCT by integrating additional concepts (beyond those of A2) and mechanisms (beyond that of A3) into the core assumptions of general theories of action, often borrowing explicitly from other sociological approaches. As our discussion below shows, European RCT has seen key contributions to both of these metatheoretical alternatives, which in turn have led to new hypotheses and empirical applications in sociological research fields.

The Wide Version of Rational Choice Theory

The most important, though equally controversial, development in RCT over the past few decades has been the transition from a narrow to a wide version of the theory (cf. Opp 1999). Although RCT continues to be regularly equated with *Homo economicus* by its critics, sociological RCT has increasingly embraced a version of the approach that relaxes its traditional restrictive assumptions. In this wide version, preferences need only satisfy consistency requirements but can otherwise encompass such diverse motivations as altruism and fairness or, more generally, the desire to act according to one's identity, values, and internalized norms (Yee 1997). Beliefs are inherently subjective and may be based on incomplete, imperfect, or biased information. Similarly, it is not only objective constraints that matter but also those perceived by the actors.

The adoption of this wide version of RCT was a response to the apparent counterevidence stemming from applied fields of research. For example, in the study of collective action, it was observed that many individuals contribute

to the provision of public goods despite the free-rider problem and the costs and marginal impact of individual contributions (cf. Opp 1986, p. 93). As a reaction, scholars developed a wide rational choice model of collective political action (Finkel et al. 1989; Opp 1986, 2001). This model assumes that actors can derive intrinsic benefits from participation and that even in large groups they may believe their own contributions make a difference to the likelihood of success of collective political action. A series of empirical applications and tests has confirmed that such "soft" incentives and misperceptions are indeed major individual determinants of participation (for an overview, see Opp 2001). Similarly, the adoption of the wide version provided RCT with a way to explain why many individuals perform costly sanctions vis-à-vis norm-breakers (Fehr & Gächter 2002) or exhibit altruistic behavior (Andreoni 1990) or even why terrorists engage in suicide attacks (Pape 2003).

As could be expected in a multiple-paradigm science like sociology (Ritzer 1975), the widening of RCT's core assumptions provoked harsh reactions. It was argued that by its very attempt to explain all kinds of behavior, RCT had become deprived of its explanatory power, had come close to tautology, and had lost its falsifiability (Bohman 1992, Mood 2009, Smelser 1992) or even its status as a scientific approach (Bunge 1996). Although the wide version of RCT has been defended against this metatheoretical line of criticism (Lovett 2006, Opp 1999), the critical assessment has been readily embraced by proponents of other approaches, and deep skepticism continues to confront the wide version of RCT in fields of sociological research (e.g., Akers & Sellers 2009, pp. 29–31).

For RCT, the crucial question is how much creativity to allow in the assumptions about actors' motivations and beliefs. One of the most forceful advocates of the wide version is Opp (1999). His work—of which the described model of collective political action is a main example—stretches the wide version of RCT as far as one can possibly imagine. Regarding preferences, Opp even abandons the assumption that actors are motivated by the consequences of their actions (i.e., the assumption of consequentialism), which is often regarded as a characteristic postulate of RCT (Boudon 2003, p. 3; McCarthy 2002, p. 418). Thus, actors can derive utility directly from choosing an action if this action is in line with their internalized norms or conforms to their identity. In the same way, Opp's wide version entails neither a priori restrictions on the beliefs that actors can hold nor assumptions about the rationality of the belief-formation process. For Opp, the question of which incentives and beliefs govern behavior is an empirical one. Because wide rational choice models could be directly tested, claims that the wide version of RCT is circular, tautological, or unfalsifiable would not hold up under closer scrutiny (Opp 1999).

However, the wide version of RCT faces a major problem, one that escapes its metatheoretical defense and concerns the promise of theory-guidance that has accounted for a great share of RCT's attractiveness. As long as actors were generally assumed to be well-informed, rational egoists who cared only about tangible costs and benefits, RCT's core assumptions alone could provide theory-guidance to empirical applications. In contrast, the core of the wide version is almost empty, as even proponents of the approach readily acknowledge (Esser 1998, Lindenberg 1996a, Opp & Friedrichs 1996). The wide version of RCT is able to assimilate almost any psychological concept or theory and translate it into more or less "soft" incentives or a more or less inaccurate belief. Consequently, the whole burden of rational choice explanations relies on the auxiliary assumptions, and this reliance implies both a lack of theory-guidance and a proliferating conceptual pluralism in applications of RCT. This emptiness problem provided the background for the methodological discussion about the legitimate sources of auxiliary assumptions that was reviewed in the previous section. Regarding the debate about the wide version of RCT, it is now clear that this is not merely a methodological problem. To be sure, in empirical applications, researchers

might find enough hold in arriving at the necessary auxiliary assumptions through a combination of substantive background knowledge, qualitative pretests, and orientating heuristic principles. Theoretically, however, this does not remove the question of how wide the core assumptions of RCT or how broad the set of allowed auxiliary assumptions should be.

Even in the eyes of many RCT scholars, the transition to the wide version threatens to deprive RCT of its comparative advantage of allowing for the deduction of a wide range of precise hypotheses from a few principles. This concern has motivated several methodological and theoretical responses. Some scholars have tried to find methodological justifications for continuing to use a narrow version of RCT. A frequent argument maintains that changes in tangible benefits and rewards matter at the margin and hence are important to study, even if there are also other, more elusive determinants of behavior (Diekmann & Voss 2004, Grofman 1993). Others have recommended at least starting from a narrow version of RCT because it would give a useful benchmark of strictly rational behavior for subsequent analyses (e.g., Raub et al. 2011, p. 15). If the implications of narrow rational choice models do not match reality, one should first attempt to model the social situation in more realistic ways before introducing nonselfish preferences or bounded rationality. Relaxing simplifications in such a stepwise fashion is known as the method of decreasing abstraction (Lindenberg 1992). This method avoids an instrumentalist manner of model building (cf. Hedström & Ylikoski 2010, Sánchez-Cuenca 2008) as long as researchers show that unrealistic micro-level assumptions are of little explanatory relevance, for example by conducting explicit robustness analyses (Lehtinen & Kuorikoski 2007) as opposed to relying solely on an indirect strategy of testing just macro-level implications of narrow rational choice models. One theoretical attempt to equip the wide version of RCT with theory-guidance is Lindenberg's SPF theory, discussed above. Another is the so-called low-cost hypothesis (Diekmann & Preisendörfer 1992, 2003), which maintains that soft incentives (such as environmental concern) are only influential in low-cost situations in which differences between action alternatives in terms of tangible costs (e.g., money) are relatively small. Thus, the hypothesis tells the researcher when to use which auxiliary assumption about preferences. Similar to SPF theory, the low-cost hypothesis has inspired a great deal of empirical research but has also been criticized, as mixed empirical evidence casts into doubt its assertion that tangible costs generally trump moral incentives (Best 2010, Best & Kneip 2011). Nonetheless, both SPF theory and the low-cost hypothesis already point in the direction of not only relaxing but also enriching RCT's core assumptions.

Enriching Rational Choice Theory's Core Assumptions: Toward Theoretical Integration

Major RCT figures in Europe have argued that simply allowing for a greater range of preferences, expectations, and constraints is not enough (Boudon 2003, Elster 2007, Esser 2009, Lindenberg 2008). Rather, they have suggested going beyond explaining behavior solely in terms of maximizing expected utility under constraints. The view that RCT is in need of a major overhaul grew partly out of the emptiness problem of the wide version. In addition, it was motivated by empirical evidence that suggested integrating additional concepts and mechanisms within a more general theory of action. Two kinds of evidence in particular proved to be fertile ground for such attempts: First, several studies point to a greater context dependence of behavior than RCT would expect. Second, there are indications that a significant share of individuals responds less to incentives than RCT would expect.

A series of experiments has shown that behavior in social dilemmas varies strongly according to situational labels and implicit cues even though the objective game being played remains exactly the same (Kay & Ross 2003, Kay et al. 2004, Larrick & Blount 1997,

Liberman et al. 2004). For example, labeling a Prisoner's Dilemma a Community Game, versus a Wall Street Game, has a very strong impact on cooperation rates (Liberman et al. 2004), and even the mere presence of material objects related to business contexts was found to have a large effect on choices in the Ultimatum Game (Kay et al. 2004). A common interpretation of such findings points to framing effects: It seems that behavior is profoundly shaped by the way actors interpret a situation based on significant cues that activate mental models, such as cultural ideas and normative commitments. Main proponents of behavioral game theory have come to appreciate that such framing effects are not experimentally construed particularities but reflect a basic process underlying every action (Bicchieri 2006; Gintis 2007, p. 11; Henrich et al. 2004, p. 48): Individuals are apparently "*choosing a frame* for interpreting the experimental situation" (Gintis 2000, p. 241). Therefore, their behavior is often very sensitive to context, producing variation among situations of seemingly minor difference, as well as robust cross-cultural differences.

Whereas this evidence suggests that RCT predicts too little variation between situations, other findings suggest that RCT expects human behavior to vary more than it actually does. In core fields of sociological research, analyses have shown that actors respond less to incentives than is predicted by rational choice models. In the study of migration, scholars have long noted that many individuals who would gain from migration and have the opportunity to move do not even consider this alternative (e.g., Speare 1971, p. 130). Similarly, in the study of voter participation, researchers have repeatedly shown that many people are rather unresponsive to the expected benefits and costs of voting (e.g., Blais 2000), just as in the study of crime, individuals are recognized to vary in their "deterrability" (e.g., Pogarsky 2002). Thus, evidence in applied fields suggests the existence of considerable variation in individuals' sensitivity to incentives.

Both kinds of evidence suggest sources of variation that are beyond the basic mechanism of expected utility maximization under constraints. This does not necessarily imply that RCT is to be dismissed for giving a wrong account (Abell 1992, pp. 191ff.). Representations of these phenomena in terms of preferences, expectations, and constraints may still be possible (Gintis 2007, pp. 48ff.). Rather, the crucial point is that the mechanisms that produce framing effects and the varying sensitivity to incentives are largely exogenous to such representations. And because these action-generating mechanisms can be expected to have important macro-level consequences (e.g., for the persistence of social inequality or conflict resolution), scholars increasingly recognize that their incorporation can be of considerable explanatory value (Akerlof & Kranton 2000, Fehr & Hoff 2011, Lindenberg 2008).

This development should not come as a surprise in sociology, as the idea of the definition of the situation and the idea that actors are at times insensitive to incentives have long been at the core of sociological thinking (e.g., Parsons 1937, Schütz 1970, Thomas & Znaniecki 1927, Weber 1978). Although much of this work was confined to mere conceptual discussions, prominent (former) advocates of RCT in Europe have attempted to use these ideas as starting points for more comprehensive theories of action. Reinvigorating Weber's concept of value rationality, Boudon (1996, 2003) has stressed that actors are often motivated by normative or cognitive beliefs rather than instrumental incentives. To explain such noninstrumental actions, Boudon has put forward his theory of ordinary cognitive rationality (cf. Boudon 2011), which focuses on reconstructing the transsubjective systems of reason from which actors' values, beliefs, and sentiments derive (for applications, see Boudon 2001). In a different vein, Lindenberg (2001, 2008) and Esser (2001, 2009) have developed theories of action that focus on the selection and impact of frames, allowing integration of key insights from symbolic interactionism, phenomenological sociology, and social psychology. These framing theories deserve particular attention, as they are less

well known but have already proven capable of generating substantive progress in several sociological fields of application.

Lindenberg's (2001, 2008) theory of goal-framing starts from the assumption that human beings are made to be rather one-sided by the goal that is focal at the moment (the goal-frame) instead of considering the full range of preferences and constraints, as is often implied by traditional RCT. At the heart of the theory is the dynamic between foreground goals and background goals, both of which are being activated via situational cues. Whereas foreground goals mainly govern perception, the activation of knowledge, and behavior, background goals can still exert an influence, either strengthening or weakening the grip of the focal goal on processes of cognition and behavior. As in his SPF theory, Lindenberg sets out to explicitly define the main overarching goals shared by all human beings: The hedonic goal calls upon the actor to improve the way she feels right now, the gain goal asks her to guard and improve her resources in a longer-term perspective, and the normative goal requires her to act appropriately, by conforming to social expectations. According to Lindenberg, the hedonic goal has the greatest a priori strength (i.e., is most likely to govern behavior), followed by the gain goal, and then by the normative goal. Thus, stabilization of gain and normative goal-frames often requires considerable social and institutional support. At the same time, actors—although not able to directly choose a goal-frame—attempt to balance the goal-frames in a process of self-regulation, for example by either escaping or seeking certain kinds of situations and social influences.

A particularity of Lindenberg's theory is its understanding of the concept of frames. For Lindenberg, it is overarching goals that "define the situation" in the sense of structuring attention and activating knowledge and behaviors. This emphasis on goals differs from the traditional understanding in sociology in which frames have been regarded as mental models that allow actors to interpret a given situation (Goffman 1974). It is in this sense that Esser integrates this concept into a theory of action that aims at paying due attention to normative and cultural dimensions of behavior while retaining the explanatory power of RCT (cf. Esser 2009, Kroneberg et al. 2010b). Esser (2001) has shifted from defending a wide version of RCT to developing a theory of action that attempts to integrate different sociological approaches. Because its starting point is the idea of the definition of the situation, the theory is called the model of frame selection (MFS). The MFS explains how an actor defines a situation (frame selection), which program of action he activates (script selection), and which action he is willing to perform (cf. Esser 2009, Kroneberg et al. 2010b). Similar to Lindenberg, Esser describes manifold ways in which the selected frame and the activated script influence behavior. The second pillar on which the MFS builds is the idea of variable rationality. Although in many respects behavior follows strongly activated or taken-for-granted programs (automatic-spontaneous mode), in other respects it is indeed based on prior reflection and weighing of alternatives (reflecting-calculating mode). The MFS specifies the conditions under which the frame, script, and action selections will follow one or the other mode, thereby endogenizing actors' modes of information processing. Due to the effort involved in reflection, human beings engage in this activity only if sufficient motivation and opportunities to do so are present (cf. Chaiken & Trope 1999). Additionally, the mode of information processing depends on the strength of activation of a program-based response. The model predicts spontaneous behavior and a reduced sensitivity to incentives to the extent that actors can rely on strongly anchored scripts that are activated in a clearly defined situation.

Lindenberg's and Esser's framing models not only take up classical sociological ideas but also make use of the potential of cognitive social psychology to provide microfoundations for sociology (Cerulo 2010, DiMaggio 1997). In contrast to much of the institutionalist and culturalist literature along these lines, both theories clearly specify the action-generating

mechanisms. Most importantly within the context of our review, both theories have already proven to possess considerable hypothesis-generating power. Among recent applications of the goal-framing theory are analyses of peer relations in adolescence, of deviance, and of environmental behavior (Dijkstra et al. 2007, Keizer et al. 2008, Lindenberg & Steg 2007). The MFS has recently been applied to the explanation of altruism, crime, environmental behavior, fertility decisions, and voting behavior (Best & Kneip 2011; Kroneberg et al. 2010a,b; Nauck 2007).

To be sure, within RCT widespread skepticism confronts framing models of the kind developed by Lindenberg and Esser. To some extent, these reservations reflect the metatheoretical principles to which RCT has subscribed. As stressed by Boudon (2003), invoking the concept of frames poses the danger of introducing a black box. Analyses should therefore make comprehensible why actors come to interpret situations in certain ways. Another legitimate concern stems from the multilevel character of sociological explanations. As collective phenomena and social mechanisms are generally of primary interest, there is often good reason to use more parsimonious models of individual behavior (Coleman 1990, Hedström 2005, Macy & Willer 2002). However, the kinds of simplifications that are called for and possible depend on the explanatory task at hand (Hedström & Ylikoski 2010, p. 60). Thus, more complex theories of action could help to introduce simplifying assumptions more systematically and to relax them when this proves necessary or worthwhile (Lindenberg 1992).

CONCLUSION

The strengths of RCT lie in the development of precise theoretical models that allow hypotheses to be derived and empirically tested in theory-driven research. Although it has ignited many debates and has been repeatedly declared dead by its critics, RCT has successfully entered into and to some extent transformed the mainstream of core sociological fields of study. Simultaneously, however, the genuine strengths of RCT are at risk of vanishing into the background if it becomes merely a loose reference in the theory sections of empirical papers. It is not least out of this concern that our review has placed emphasis on the methodology of theory-guided research using RCT.

As we have shown, methodological discussions in European RCT have helped to identify the strengths and shortcomings of different research strategies, allowing researchers to make more informed and better justified choices. Related to these discussions is the transformation of RCT's core assumptions, which has likewise seen important European contributions. The ambitious purpose of RCT's core assumptions was to endow the social sciences with common behavioral microfoundations. This common core was thought to give theory-guidance to empirical research and unify the resulting knowledge in the various fields of applications. As RCT has abandoned many of its traditional restrictive assumptions, auxiliary assumptions about actors' preferences, beliefs, and constraints have taken on increased importance. This emptiness of RCT's core poses problems for the ideas of theory-guidance and theoretical unification. Our review has discussed several reactions to this development. Whereas some scholars justify adhering to a narrow version of RCT on methodological grounds, others argue that one could resolve the emptiness problem by relying on empirical methods to determine and measure preferences, expectations, and constraints. Still others favor a major overhaul of RCT's core assumptions by incorporating new concepts and mechanisms. Albeit in different ways, Lindenberg's and Esser's theories of action assign a central place to actors' definition of the situation and to their varying sensitivity to incentives. One can certainly debate whether or not such theories should still be regarded as being part of RCT (Abell 1996, p. 234).

Anyhow, in the face of growing theoretical and methodological pluralism, proponents of RCT seem to have become more relaxed about its boundaries. Main scholars even state that

the term "rationality" could easily be dropped, as any precise decision rule could be used (Diekmann & Voss 2004), or they equate RCT with the structural-individualistic research program, as illustrated by the macro-micro-macro scheme (Opp 2011). In this more pragmatic understanding, the strong program of common behavioral microfoundations is replaced by a subscription to common epistemological principles. Such principles are at the heart of the program of analytical sociology (Hedström 2005, Hedström & Bearman 2009), which aims at mechanism-based explanations and shares RCT's standards of theorizing, such as precision, abstraction, and a focus on how social phenomena emerge from actions and interactions. On the one hand, positioning RCT within the wider program of analytical sociology (cf. Manzo 2010) could help to overcome the widespread skepticism and misperception that RCT still faces in the discipline. On the other hand, there is good reason to hold on to RCT's vision of common behavioral microfoundations. The idea of basing diverse explanations and models of social phenomena on the same general theory of action has not lost its appeal. In response to the problems of the narrow and wide versions of RCT, such a theory would certainly have to be more complex in order to allow both theory-guidance and empirically valid explanations. Given the need for parsimony when focusing on the micro-macro transition, it would also have to allow for drastic simplifications in response to the explanatory task at hand. It is yet unclear whether such common microfoundations will emerge and what they would look like. In any case, owing to RCT's metatheoretical principles, the competition among this vision and its alternatives will surely not remain confined to conceptual discussions; rather, it promises to stimulate further progress in sociological fields of research.

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