

FROM PARADOXES TO SOCIAL RULES, OR: HOW ECONOMICS REPEATS ITSELF

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There is an analogy of how the paradox of aggregation (Arrow impossibility theorem) and the paradoxa of individual behavior (people decide inconsistently) have been approached in mainstream research. In both cases it is disregarded that paradoxa are part of social reality. A constitutional approach focussing on rules and institutions promises to yield more fruitful insights.

I. Paradoxa of Aggregation and of Behavior

In post-war economics there are two major areas in which paradoxa have been found. The first concerns the *paradox of aggregation* stating that it is in general impossible to consistently and democratically derive a social welfare function from individual preferences. The second concerns *paradoxa of individual behavior* according to which people do not make consistent choices but under some conditions are prone to systematic biases.

In both cases one of the cornerstones of modern economic science, rationality, is basically questioned, in the first case violating Arrow's, and in the second case, von Neuman's and Morgenstern's axioms. Not surprisingly, these findings have evoked great interest in economics and its neighboring sciences, and a large literature has developed.

This paper argues that the scientific research dealing with these two kinds of paradoxa shows similiar structures:

- (i) there exist neglected forerunners;
- (ii) the violation of rationality is considered a paradox, and a threat to accepted science;
- (iii) the reaction has been to find conditions under which these 'irrationalities' disappear and/or are embraced within orthodoxy; and
- (iv) there exists a non-orthodox interpretation considering such paradoxa to be part of social reality, and to even be desirable.

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Helpful comments by Reiner Eichenberger are gratefully acknowledged.

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The similarities are worth noting because in both cases the dominating research efforts have led us astray, therewith hindering our understanding of the individual and social phenomena involved. Traditional economics has looked at the paradoxa in a framework that is too narrow, ignoring that individual behavior takes place in a social setting in which rules, and therewith institutional or constitutional restraints, are of central importance.

With respect to the paradox of aggregation, this point has long ago and forcefully been made by Buchanan (1954); it is therefore only briefly discussed in section II. That current day dominant scientific analysis is likely to again choose the wrong track is argued in section III for the case of behavioral paradoxa. Section IV looks at the prospects for the future.

II. The Paradox of Aggregation

The development of the research dealing with this paradox is discussed following the four stages distinguished in the previous section.

1. Forerunners. That inconsistencies may arise when individual preferences are to be aggregated to a social choice or social welfare function was recognized for simple majority voting as early as the 18th century (by the Marquis de Condorcet) and in the 19th century (by Lewis Carroll, or the Reverend Dodgson, among others), a history beautifully expounded by Black (1958). But this knowledge was lost, and Arrow (1950; 1951) and Black (1948a; 1948b) discovered the paradox anew.

2. Interpretation. The aggregation paradox was considered by orthodox social science as a threat; the ideal of democracy as a desirable and rational form of government was put into doubt.

3. Reaction. Mainstream economists (and political scientists) made a concentrated effort to show the conditions under which it is possible to reach consistent social choices, and to evaluate social states according to a social welfare function. A field of its own, social choice, was created. (An excellent survey is Sen 1970; see also Fishburn 1973).

The general result was negative: the impossibility result stayed. It was e.g. shown that Black's (1958) single-peakedness condition requires

almost complete identity of individual preferences for multi-dimensional issues (Plott 1967; Kramer 1973). Instead of accepting the general possibility of the impossibility theorem (Tullock 1967), and to therefrom draw conclusions, social choice theorists relentlessly pursued their effort along the same lines, producing an unending stream of papers and monographs.

4. Rules and Constitution. Orthodox economics paid little or no attention to Buchanan's (1954) early analysis of how to deal with the paradox of aggregation. He argued that all institutions are imperfect and prone to failure judged by (externally imposed) rationality. This applies to democracy as well as to the market. Indeed, lapses from rationality (in the sense of consistency) may even be seen as a desirable feature because they prohibit the continuous exploitation of the minority by the majority. Buchanan (1954), and Buchanan and Tullock (1962) conclude that one has to concentrate on the choice of rules, thus giving birth to the modern economic theory of constitutions.

III. Paradoxa of Individual Behavior

Strikingly similar, if not identical, stages in development may also be observed for behavioral paradoxa of individuals.

1. Forerunners. In 1979, Kahneman and Tversky published an article in *Econometrica* in which they showed on the basis of a wealth of experimental evidence that people systematically violated the von Neumann and Morgenstern (1947) axioms which are generally taken to be 'reasonable' requirements for rationality. This came as a shock to economists despite the fact that such biases had been pointed out clearly by such noted economists as Allais (1953) and Ellsberg (1961) much earlier. Again, these forerunners were disregarded.

2. Interpretation. The finding that people violate rationality systematically and in important ways was again taken as a major threat to established economics. It means, in particular, that explaining behavior under uncertainty by employing the model of maximizing subjective expected utility is put into serious doubt (Schoemaker 1982). Interactions with cognitive psychologists and the experimental findings of some economists (e.g. Grether and Plott 1979 with preference reversals)

revealed that many such paradoxa of individual behavior exist (for surveys see e.g. Slovic, Fischhoff and Lichtenstein 1977; Payne 1982; Shapira 1986; and for collections of essays Kahneman, Slovic and Tversky 1982; Arkes and Hammond 1986; Hogarth and Reder 1987; Bell, Raiffa and Tversky 1988). While some economists frantically try to define these paradoxa away, or simply neglect them, at least some take them seriously (see Frey and Eichenberger 1989).

3. Reaction. As in the case of the aggregation paradox, mainstream economists make a great effort to include the behavioral paradoxa within the confines of an expanded formulation of the classical subjective expected utility model, or of an even more general non-expected utility model of preferences. In his excellent survey, Machina (1987) distinguishes five types of anomalies and discusses the reformulations of preference theory required to encompass them. They are (i) fanning out, consisting in turn of the common consequence effect as a generalization of the Allais paradox; of the common ratio effect stemming from another example by Allais (1953) and including as special cases the certainty effect (Kahneman and Tversky 1979) and the Bergen paradox (Hagen 1979); and of the utility evaluation effect; (ii) preference reversals, including the response mode effect; (iii) framing effects (for the political sphere, see e.g. Quattrone and Tversky (1988); (iv) probability biases; and (v) the Ellsberg paradox. A careful analysis shows that no generalized utility theory can explain all these behavioral paradoxa (see Camerer 1989). Thus, the same outcome resulted as in the case of the aggregation paradox: The effort to reestablish 'rationality' (in terms of exogenously imposed conditions) as a *general* feature of individual behavior proved to be a failure. (This is likely to remain so; particularly framing effects seem to be impossible to integrate within the confines of established rationality theory.)

It is interesting to note that there is a further analogy to the research on the aggregation paradox. In the same way as the rediscoverer of the paradox, Black, provided his own 'solution' to the problem (single-peakedness), in the case of the behavioral paradoxa Kahneman and Tversky also provided their own 'solution' (the so-called prospect theory). Both these early attempts had a large impact on subsequent research.

4. Rules and Institutions. In analogy to Buchanan's (1954) critique of the orthodox reaction to the aggregation paradox, it may be argued that

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it is *not necessary* to assume 'rationality' as conceived in that literature, while still staying within the rational choice framework. While individuals are subject to behavioral paradoxa, they *are* rational enough to try to overcome the resulting costs by resorting to appropriate rules (see, more extensively, Frey and Eichenberger 1990). The philosopher Frankfurt (1971) considers the fact that people recognize their own weaknesses, and are able (at least partly) to overcome them by resorting to appropriate action, to be a peculiar characteristic of *human* beings. This view has been shared and discussed in economics by authors such as Sen (1979) and Hirschman (1982). An important rule is self-commitment (Schelling 1980; Elster 1979; 1986) where an individual binds him or herself in order not to fall prey to paradoxa, e.g. by avoiding circumstances in which he or she knows that irrationalities are likely to occur, or by asking family members or friends to restrain him or her. As a response to the demand of 'irrational' individuals to be forced to act more rationally, or to at least reduce the cost of irrational action, *institutions* may spontaneously emerge or may consciously be created. They may consist of government laws or constitutional provisions which restrict the realm of anomaly-prone behavior and prohibit action by persons who are known to easily fall prey to anomalies.

It may—again in analogy to Buchanan (1954)—be argued that individual rationality (in terms of von Neumann/Morgenstern axioms) is *not desirable*. In some cases people even consciously want to exclude rationality. An important example is the relationship to one's family or friends, where people wish their behavior to be guided by respect, admiration, and love—and exactly not by rational calculation. Under one condition, namely infatuation, irrational behavior is even used purposely in order to indicate to the admired person how much one cherishes him or her. To acknowledge that such states as 'amour fou' do exist, and that many take them to constitute utmost bliss, makes economics more realistic. At the same time the rational framework forming the basis of economics is not given up because people are thought to resort to rules that prevent such feelings getting out of hand. Depending on the institutions prevailing, paradoxical behavior is more or less checked. In a well functioning market, for instance, there is little room for such 'irrationalities', while within e.g. a group of colleagues or friends there is much more room.

IV. Which Approach Will Prevail?

In the case of the paradox of aggregation the four stages of the sequence of research identified are more advanced. While social choice

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theory is still an important area within (formal) economics, and there are many new results produced each year, the alternative approach, namely constitutional economics is being established. It has at least been accepted as a legitimate research area, even though mainstream economics still proceeds on the assumption that choice and welfare can be evaluated in terms of social rationality. Nevertheless, the fact that an alternative to orthodoxy is seen to exist is an important first step towards a more general acceptance.

The research development with respect to paradoxa of individual behavior is definitely at a less advanced stage. While it is slowly being realized that a problem exists at all (stage 2), the efforts at generalizing orthodox theory started only a few years ago. They are likely to become more prominent in the future. It is to be expected that the respective effort of embracing individual irrationalities within the orthodox framework will become a field of its own, similar to social choice theory. The approach looking at humans as they are, and acknowledging that they may be prone to paradoxa, and that they may even choose to be, while at the same time trying to cope with their paradoxical inclinations by imposing individual constitutional rules, is equally likely to remain an outsiders' view. However, due to the example provided by constitutional economics with respect to the aggregation paradox, this alternative view can be expected to become more readily accepted as a legitimate point of view. In any event the relationship between collective constitutional rules and individual rules should be on the agenda of constitutional political economy.

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