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“What does rationality mean for economists?”

Un document produit en version numérique par Jean-Marie Tremblay, bénévole,
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Résumé

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Ce texte qui propose une discussion de la notion de rationalité, entend montrer qu'un hiatus de plus en plus accentué s'est creusé entre le principe de rationalité sur lequel repose toute analyse économique et la notion de rationalité que la microéconomie moderne a intégrée à ses modèles. Pour le montrer, il examine la place qu'a occupée l'idée de rationalité au cours des diverses étapes de la pensée économique depuis l'économie classique jusqu'aux débats contemporains qui mettent sérieusement en cause les axiomes, comme ceux d'indépendance ou de transitivité, que les économistes contemporain associent à la rationalité. Le texte soutient que ces objections visant la notion de rationalité mettent paradoxalement en relief le rôle fondamental du principe de rationalité sur lequel elles prennent elles-mêmes appui.

Work in progress ; please, do not quote.

[5]

For many decades, debates about rationality have been widespread among economists especially among those involved in rational choice theory, decision theory and game theory. Since it is still usually admitted that economics is based on the rationality principle, it is not astonishing that discussions concerning the meaning and the role of rationality in economics did not leave economists and methodologists of economics indifferent. What might be judged astonishing, rather, it is the fact that these debates, whatever place they occupy in economic journals, do not seem to have seriously affected the development of economic theory. In fact, economists have never denied that rationality is a quite important issue, but a somewhat paradoxical consequence of the refinement of their analyses is that the notion of rationality has turned out to be more and more embodied in economic models as a purely technical element, whose subtleties are discussed as those of any other technical element, and in such a way as its fundamental role in economics has been increasingly sidelined or even forgotten altogether. Moreover, since in the wake of all these contradictory attempts to assess this notion, it is difficult to characterize rationality in any non equivocal way, it is not surprising that the *fundamental* role traditionally attributed to the rationality principle is still more difficult to grasp than it was during previous periods where the word "rationality" was almost never mentioned in economic literature.

In order to clarify what is at stake in these debates, it might be useful to have a look at the origin of the rationality principle and to follow the main steps by which the meaning of the notion of rationality has been progressively reassessed and redefined up to our days. Thus, this paper will attempt to describe and discuss step by step – from the implicit postulates of the eighteen century economists to the recent debates in the decision theory – how the very notion of rationality was transformed with the development of novelization within modern microeconomics. In this fashion, it will show how the present situation, which is somewhat confusing when it comes to characterizing rationality, came to prevail. Its claim is that a progressively accentuated gap between the notion of rationality invoked by modern economic models and what is properly called the

rationality principle is the source of the confusion surrounding the role of rationality in economics. This process, which is closely related to the process through which economics was developed as a "separate" science, to use [6] the term adopted by Daniel Hausman (1992), is also responsible for the fact that rationality (frequently identified with maximization) became a peculiar and highly technical trait of economic models, whereas, at the origin, it was a basic principle for most of the social sciences. Incidentally, many compelling arguments which emphasize violations of axioms (like the axiom of transitivity or the axiom of independence) usually associated with the modern conception of rationality might turn out to be less devastating if it is recalled that these axioms have little to do with the rationality principle understood in terms of its fundamental role. It can even be shown that many of these attempts to debunk modern conceptions of rationality invoke a larger notion of rationality which is nothing but the one highlighted by the fundamental rationality principle itself.

Characterizing the origin of a principle that should play such a central role not only in economics but in social sciences in general might have been a difficult task if it were not so clear that economics was the first to be developed as an explanatory science or, at least, the first to clearly base its explanations precisely on the principle of rationality. The idea was rather simple : it sounds implausible to explain economic behaviour by resorting to universal laws according to which people are forced to behave in a determinate way, but it is possible to draw instead on the fact that people, in most situations which are not too problematic to cope with, *act* in a relatively determinate and adapted way. It was such an idea, indeed, that Karl Popper described as the "rationality principle" when he supposed, in his classic but highly controversial paper on the topic, that agents act "in a manner appropriate to the situation in which they find themselves". (Popper, 1985, p. 361), If it is admitted that a sufficiently determinate action is clearly the appropriate thing to do in a given set of circumstances, this principle can be used as a surrogate for the laws which have made the success of the natural sciences. Whether one does some act A by the force of a law according to which everyone does A in the same set of circumstances or because one who is not stupid would surely do A when it is clearly one's interest to do A in those circumstances is almost immaterial when the question is to

explain *that* one actually did A or when the question is to predict whether one *would* freely do A in such circumstances. And given that the economic interest of an individual is relatively easy to characterize, most economic behaviour was perceived as explainable with the help of such a principle. ¹

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I. The rationality principle in classical economics

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Historically, it was mainly with the liberal revolution at the end of the eighteenth century that this principle's potential began to be fully exploited. It is true that some economic thinking was going on much earlier, but in most case it was a matter of advising the Prince about wise ways to increase the wealth of the realm through policies whose discussion did not usually required full-fledge explanations of economic mechanisms. However, with the advocacy of a *laissez-faire* approach, the situation was quite different because liberal economists were committed to showing that automatic mechanisms would take better care of the economic situation of the country than the Prince. They had to explain the *automatic* workings of economic mechanisms with the help of solid principles. It is in this context that they systematically resorted to what would much later be labeled as "the rationality principle". Let us, for example, consider Turgot who, as early as 1766, argued that a "current price" *has* to prevail in a market (and not simply *should* prevail, as earlier "just price" theorists would have said) : "If one of the wine sellers were offering only four quarts for a bushel, the owner of the wheat will not give it to this wine seller if he knows that another will give him six or eight quarts for the same

¹ This principle was labeled the "economic principle" by Fritz Machlup (1955, p. 16) who adds that "various names have been suggested for the fundamental postulates of economic theory : 'economic principle,' 'maximisation principle,' 'assumption of rationality,' 'law of motivation,' and others".

bushel". ² This sentence contains, in a nutshell, the central intuition on which most future price theories were based. Turgot's argument was clearly based on the fact that people are rational in the sense that they are not stupid. Who would be stupid enough indeed to give one bushel of wheat in exchange for only four quarts of wine when it is well known that other wine sellers would be happy to give six or eight quarts for the same bushel ? Was it not legitimate to presume that (rational) economic agents prefer to get more wine rather than less and that, once informed about the possibilities available to them, they will (freely) take the appropriate means (or, in the present case, they will make the appropriate deal) to obtain what they prefer ? Clearly, Turgot was convinced that such a presumption was well grounded and consequently he was in position to rely on this implicit rationality principle to conclude that wine sellers and other traders would adjust their prices in the manner described and to explain thereby that a single price tends to prevail in a market. Were a [8] significant number of people inclined to prefer to obtain less rather than more wine for the same price or to be totally indifferent to such matters, Turgot and his successors would have been at a loss to explain this stability of market prices or to predict even roughly any price level. More generally, were a significant number of people inclined to act in a stupid rather than in a "rational" fashion, the prospects for explanation by the social sciences of phenomena based on human action would be reduced dramatically.

It is true that Turgot had adopted a theory of value based on needs and desires which was closer to the marginalist utility theory of value – which is itself intimately associated with rational calculus – than was the production cost theory of value which classical economists such as Smith and Ricardo were committed to. This fact, however, does not imply that Smith and Ricardo's respective theories are less indebted to the rationality principle. Here again, I do not mean that one can find an explicit acknowledgement of the crucial role of the rationality principle in the work of these economists ³, but rather that

² Turgot, *Réflexion sur la formation et la distribution des richesses* dans Turgot, 1970, p. 141 (free translation).

³ The only examples of an almost explicit acknowledgement of this role that I know were kindly pointed out to me by William Coleman (University of Tasmania). The first one is a rather timid psychosociological observation by

their theories make no sense without an implicit acknowledgment of such a role.

To take a particularly compelling example, notice how Smith explains why market prices tend to oscillate around what he called a "natural price". (Smith, 1937, book I, ch. 7) In a certain sense, one can even say that the rationality principle is implied by the very idea of a *natural price*, which was defined as the price that is just sufficient to bring to the market the quantity of commodities required to satisfy normal demand. Indeed, if he did not suppose that producers are rational, how could Smith be so sure that a higher price would be operative in convincing some producers to produce more [9] commodities and to bring more of them to the market ? The role of an implicit rationality principle is even clearer when we consider the way in which Smith argues that the market price tends to be brought in line with the natural price. Indeed, he explains that in the event of a supply of a commodity in excess of its demand the market price of this commodity would be below its natural price and that, consequently, either rents, wages or profits in this sector would be below their natural rates. Such a situation, according to Smith, would impel the affected landowners, workers or employers to draw part of their resources away from this market. But how could Smith be so sure that they would react in such a way if it were not because he postulates that people are not stupid enough to keep renting, working or investing if they are no longer paid an amount that is considered

Smith referring to the prudence of those who would refrain from considerably increasing expenses in the absence of a parallel increase in revenue : "though the principles of common prudence do not always govern the conduct of every individual, they always influence that of the majority of every class or order" (Smith, 1937, p. 279). This passage was quoted in Coleman, 1995, p. 126 which, incidentally, is a nuanced assessment of the classical economists' perception of rationality. The second one, which can be found in a letter from Ricardo to Malthus, can be interpreted as implying that most economic propositions must postulate that people are not ignorant of their best interest : "It would be no answer to me to say that men were ignorant of the best and cheapest mode of conducting their business and paying their debts, because that is a question of fact not of science, and might be urged against almost every proposition in Political Economy" ("Ricardo to Malthus, 22 October 1811" in Ricardo, 1951-..., vol VI, p. 64, quoted by Coleman in the review of another book).

sufficient to pursue such an activity ? And how could Smith know that such a withdrawal would cease as soon as the price went back to a satisfactory level if it were not because he postulates that people are not stupid enough to indefinitely keep divesting in an activity that has become increasingly consistent with what is required to practice it ? And how could he know that this withdrawal would produce this happy effect for the producers if it were not because he postulates that consumers are not stupid enough to stubbornly refuse to pay a slightly higher but still reasonable price when they see that otherwise they can no longer find a sufficient amount of the commodity they need.

In Ricardo's economics, arguments based on a rationality principle become even pervasive. In the famous Ricardian rent theory for example, it is implied that farmers exploiting high quality land would freely accept to pay a rent to their landowner because they are not stupid enough to take the trouble to move to a lower quality free land if their net profit would not be higher than the profit they presently obtain even after paying the required rent.⁴ But more importantly, this theory postulate the equality of profit rates at each step of the argument, a postulate which is nothing but a straightforward derivation of the rationality principle associated with the postulate of the mobility of capital. No capitalist indeed is supposed to be stupid enough to keep producing in an industry whose rate of profit would fall below the rate offered by another one if it is assumed that capital can easily be transferred to the latter industry. In such circumstances, why leave capital relatively unfruitful in an industry which would provide a smaller profit rate than in another one that is easily accessible ? Why should capitalists [10] refrain from transferring their capital this way until an equalization of profit rates is reached ? The same postulate also plays a crucial role in the elegant demonstration with which Ricardo emphasize the inaccuracy of the labour theory of value in situations where different labour-capital ratios prevail between industries.⁵

⁴ Ricardo *An Essay on the Influence of Low Price of Corn on the Profits of Stock* in Ricardo, 1951-..., vol IV, pp. 1-41 and also ch. II of *On the Principles of Political Economy and Taxation* in Ricardo, 1951-..., vol I, pp. 1-447.

⁵ Ch. I, section IV and V of *On the Principles of Political Economy and Taxation* in Ricardo, 1951-..., vol. I, pp. 1-447.

Even if it was the development of liberal economics which made the need to draw from the rationality principle evident, the importance of this principle is not necessarily diminished when we turn to anti-liberal economists such as Marx. How could capitalists's compulsion to "increase their relative surplus value" according to a so-called "law" of capitalism be understood if it was not postulated by Marx that, once a successful innovation placed them in a favourable position, they are rational enough to cut their prices in order to maximize their profit by taking away from their competitors a greater and greater share of a strictly limited market. And when Marx revisits Ricardian analysis, as he did in his transformation theory ⁶, the role of the rationality principle is still crucial in explaining why production prices must diverge from values. Like Ricardo's, Marx's argument postulates the equality of profit rates because it seems obvious that capitalists are not stupid enough to keep investing in an industry where the rate of profit does not compare with the rate prevailing in other industries.

It is interesting to note that in Ricardian Economics, the rationality principle already takes a more radical form. The idea of an equality of profit rates suggest that capitalists would not tolerate any discrepancy between these rates. This implies not only a perfect mobility of capital but also, at least in principle, sufficient information about the evolution of profit rates everywhere in the economy. While postulating a significant degree of self-interested behaviour among economic agents, Turgot and Smith did not suppose that those agents benefited from more information than information which is available to any trader by the normal workings of the market. However, one should not exaggerate this difference since it is always possible to interpret the equalization of profit rates as something [11] which is realized very progressively with the diffusion of information through the whole economy. In any case, Ricardo's agents do not need to be equipped with an exceptional computation power ; they only need to be clever enough to move their capital where it is clearly more rewarding once it has been admitted that this capital is easily transferable and that information about the discrepancies between profit rates has been obtained.

⁶ Marx, K., *The Capital*, Book III, sections I & II.

To sum up, classical economists, at least the most representative of them, based their theory on an implicit rationality principle which required little more than the conviction that people are not stupid enough to refrain from choosing what they *clearly see* as being in their best interest. While they constantly relied on such a rationality principle, they rarely if ever took care to characterize its content or even to draw attention on it. One can see a significant but rare exception to the unconscious character of this reliance in John Stuart Mill's famous essay on methodology. Even if rationality as such is not mentioned explicitly in this passage, it is clearly referred to, when Mill characterizes an economic man as "a being who desires to possess wealth, and who is capable of judging of the comparative efficiency of means for obtaining that end" (Mill, 1948, p. 137) This sentence, which is highly evocative of the rationality principle, can even be described as a brilliant anticipation of the foundations of microeconomic analysis which, through Cairnes, was to find its way down to Robbins to become the standard epistemological justification of marginalist microeconomics. But one must admit that focusing in such a way on the instrumental character of rationality remains exceptional within classical economics.

The modelisation of rationality

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From this point of view, the great innovation introduced by the so-called marginalist revolution was clearly not an argument based on agents's rationality since, as we have seen, this kind of argument was pervasive in classical economics. It was an explicit analysis of rationality *as it operates in the minds* of economic agents. For Stanley Jevons, it was not enough to suppose that agents were not stupid ; it was important to analyze what it means for an agent to choose well or cleverly. Rationality which, up to that point, was the *implicit basic principle* of a successful social science like economics started to become part of the very *subject matter* of economics. With Jevons and his successors, rationality became the standard fashion to characterize the decisions of *homo oeconomicus* [12] insofar as this type of agent is literally programmed to reach a maximal point on a utility scale,

devised in such a way that it can meaningfully be maximized. To be sure, Smith's capitalists managed to maximize their profits just as much as Jevons's agents maximize their utility ; and, from this point of view, the difference between classical and marginalist economics should not be exaggerated. However, the principle in virtue of which Smith concluded that they do so was an implicit postulate the interpretation of which was a matter of good judgement. With the marginalist economists, the determination of the rationality of choices has been made a part of the subject matter of the science itself in such a way that the nature of the choice itself is determined by the theory in which the notion of rationality was embodied. In this analysis, a relatively clear representation of the utility provided by any good made it possible to postulate that a rational agent was nothing but an agent acting as a utility maximiser. Thus, the rational or maximizing decision-making process was reduced in marginalist models to a mechanical comparison between marginal utilities, a comparison based on the Jevonsian version of the law of diminishing marginal utility which itself is nothing but a straightforward derivation of the rationality principle for a world with stable preferences. Indeed, marginal utility is conceived as necessarily diminishing since it seems clear that an agent cannot be stupid enough to satisfy a need whose satisfaction provides less utility before satisfying a need whose satisfaction provides more of it ; thus, if the agent is rational, marginal utility is necessarily diminishing.

Given that the rational rule of the game was embodied in the very problem to be solved or, more precisely, in the very subject-matter of economics thus conceived, there was no longer a need to explicitly invoke a rationality principle as such. If economics is reduced, or nearly so, to a problem of utility maximization, it would seem redundant to insist on the fact that economic analysis is based on a principle according to which people tend to take means "appropriate to the situation". Nonetheless, what I would like to underscore is the fact that with this first modelization of rationality, a gap, one that is almost imperceptible but doomed to become wider and wider, began to appear between the basic principle itself and the concept of rationality adopted by economists. The point was no longer to explain phenomena by showing that they resulted from actions that were "appropriate to the situation" or clearly not stupid ; it was rather to

mechanically compare the respective utility of various alternatives in order to determine how a maximum level of utility could be efficiently reached. And, as is well known, modern microeconomics was developed on this basis. For example, the marginalist capitalist has to increase the level of production exactly up to the point where marginal cost equals marginal [13] revenue since this point corresponds with a maximum of profits. Clearly this maximizing behaviour does not contradict the principle of rationality, since it corresponds to the most efficient, if not the most appropriate, way to reach a goal usually and reasonably attributed to capitalists. The principle of rationality is not contradicted by this marginalist notion of rationality, as it will be literally contradicted by more recent notions of rationality ; it is simply reduced to a particular version of itself, but the door is open to the progressive rigidification of the notion which is tacitly assumed to play its role. Being an efficient computer is quite different from avoiding stupid behaviour, and this first shift in the notion of rationality had important consequences for the future of economics.

It is important to note that Carl Menger and most Austrian economists while rejecting, even more strongly than Jevons did the classical basis of economics in order to adopt their own marginalist analysis of a rational economic behaviour, have developed a quite different approach to rationality. This approach leaves much more room for an explicit role for the rationality principle, and for a role which is called into play at nearly each step of their argument. It is clear that the Austrians have resisted the trend to reduce the rationality principle to a sheer rule of maximisation embodied in the subject-matter of economics and that their resistance is closely related to the process by which this school has increasingly diverged the main stream of neo-classical economics.

However, let us rather consider the next shift in the meaning of rationality. In the Jevonsian scheme, rationality was reduced to maximization, but the value to maximize, being rather clumsily modelised as an amount of cardinal utility provided by an indefinite number of goods, could still be considered as dependent on the unmodelised preferences of the agent for those various goods. According to the principle of rationality, agents should take appropriate means which were reduced, for Jevons, to maximizing

means, but the appropriateness of an action still depended on its relatively undefined goal. Since economists typically consider that a goal is totally determined by preferences, rationality cannot be perfectly modelised without the modelisation of preferences themselves. With Paretian indifference maps, these preferences and even the decision-making process itself is modelised in a more sophisticated way avoiding any reference to vague concepts like cardinal utility. Indeed, Pareto's indifference curves have the double advantage of eliminating dependence on cumbersome psychological representations of utility without giving up the mathematics that the concept of utility [14] had made possible ⁷ and of providing an exact picture of an individual's preferences or tastes. The notion of rationality is still implicitly defined through maximization, which corresponds to the attainment of the higher available indifference curve, but both the preferences and the process (or the path) through which the maximum satisfaction can be attained is much more directly analyzed.

We have seen that with Jevons and his successors, the rationality principle was implicitly embodied in the law of diminishing marginal utility. As was shown by Hicks and Allen in their classic 1934 paper, just as ordinal utility replaced cardinal utility, the law of increasing marginal rate of substitution between any two goods must replace the law of diminishing marginal utility of any good. Just as ordinal utility designates a relative order between (cardinal) utilities, a marginal rate of substitution is a ratio between marginal utilities. Such a rate is increasing because if each added unit of some good A provides less and less utility to an individual, this individual would not be stupid enough to not require more and more of good B in exchange for each unit of A he or she decides to give up. As this increasing character corresponds to the convexity to the origin of indifference curves, the convexity of a standard indifference map is an expression of the typical preferences of a rational individual. Irrational preferences are equivalent to non-convexity in a indifference map and since it is admitted that, in using this apparatus, one postulates that any individual manages to reach his or her highest indifference curve, irrational behaviour is equivalent to a refusal to reach the highest

⁷ On this point, see Hollis & Sugden, 1993, pp. 6-7.

accessible indifference curve. In a nutshell, rationality is reduced to the logical force which pushes an agent to the tangential point of a budget line and a particular indifference curve. With the help of this picture of a *perfectly* rational agent as their principal tool, economists had still less need for an explicit rationality principle to develop their theory, but the gap between this precisely defined notion of rationality and the fundamental principle of rationality was slightly more accentuated. Among the first economists to be alarmed by this increasing gap were those who raised the lively controversies which raged in the 1940s and at the beginning of the 1950s over the relevance of marginalism in the analysis of the firm.⁸ Those who challenged the standard marginalist approach documented their arguments using principally surveys which showed that successful decisions taken [15] in the business world did not correspond to the marginalist picture but were rather based on alternative principles. It is not my intention to revisit these old debates, but I want to underline the fact that they were quite symptomatic of the gap referred to above. In these debates, the question was not whether the observed business practices were rational. It seems clear that the decisions taken by these firms were far from being stupid. Given the assessment of the situation in which they were taken, it is even possible to claim that they were appropriate enough. The principle of rationality as such were not challenged by the business surveys. It was only the notion of rationality embodied in the marginalist economic theory which was the target of those who rejected the way marginalist economics has modelised rational behaviour. If we look at the other side of the debate now, it is significant to note the different reactions of the two main defenders of the marginalist approach. On the one hand, Milton Friedman in his acclaimed 1953 methodological essay managed to dissolve the problem by claiming that the only tests which matter concern the predictions and not the assumptions of the theory⁹. Whatever the legitimacy of this position which was based largely on the alleged empirical success of economics, its determinant influence contributed significantly to pushing the almost already forgotten principle of rationality completely out of the preoccupations of

⁸ For a discussion of these controversies, see Mongin 1986a and Hausman & Mongin 1997.

⁹ I discussed Friedman's Thesis in Lagueux 1994.

economists who were discovering by this time new concepts of rationality which were, as we will see, still more distant from this fundamental principle. On the other hand, Fritz Machlup, after distinguishing three irrelevant levels of assumptions, acknowledged the role of what he called "assumed type of action (or motivation)" that he considered as "fundamental postulates"(Machlup, 1955, p.13) and which, according to him, are known under various names such as the "maximization principle" and the "assumption of rationality". Concerning such fundamental assumptions, Machlup claims that one "need not worry about independent verifications" of them (p.17). A few lines above, he justifies this openly loose position by observing that the type of action modelled as maximization is "understandable" after all, and that, according to Max Weber and Alfred Schuetz, when human action is involved, "understandability" is a more appropriate criterion than verification. When the problem is to debunk challenges to the unrealistic modelisation of rationality, the efficient strategies have been either to present the matter in such a way that the problem is perceived as irrelevant (Friedman) or to present the matter in such a way that the unrealistically modelled rationality take advantage *in catimini* of the fact that it was, after [16] all, derived from the quite realistic and "understandable" (but increasingly forgotten) rationality principle according to which people act in a sensible way (Machlup).

However, other economists were much more worried than Machlup was by the unrealistic and overspecialised character of the modelisation of rationality. Herbert Simon based his life-long systematic challenge to the standard association of rationality with maximization on the idea that maximization is just "a very particular and special form" of rationality (Simon, 1978, p. 2). In regards to what he explicitly calls the "principle of rationality" — a principle which, according to him, is not quantitative but structural — Simon proposes the following formulation : "*Ceteris paribus*, situations and practices will be preferred when important favorable consequences are associated with them, and avoided when important unfavorable consequences are associated with them" (Simon, 1978, p. 7), the word 'important' being included as a subtle reminder that, for Simon, optimization is not required by rationality. In any case, what I want to underscore is that, in order to challenge the optimization (or maximization) model, Simon appeals to a more general and less

specific principle of rationality which is nothing other than the principle according to which people normally act in a sensible rather than in a stupid way. Still more clearly than the ones we looked at above, Simon's challenge of economic orthodoxy shows up the gap between the modelisation of rationality and the genuine principle of rationality on which his challenge was explicitly based in the last resort. Like the principle which guided Turgot and Smith, Simon's fundamental "principle of rationality" refers only to favourable (or unfavourable) consequences without specifying either what will count as consequences, nor how to evaluate success in reaching these favourable consequences. It is true that, in some versions of this approach, the relatively vague notions of *satisfecit* and bounded rationality have received a more precise content with the help of some models that make room for the concepts of information cost and of deliberation cost.¹⁰ The rational agent can still be considered as a maximiser, or better, as an optimiser, in the sense that he or she optimises a decision which takes into account the possibly quite sizable cost of obtaining the considerable amount of information required to take the allegedly optimal decision and even the not negligible cost of deliberating sufficiently to make sure that the decision taken will be the optimal one. One can [17] characterize such a decision process as an optimization (or as a meta-optimization), but, given that such an interpretation could scarcely avoid circularity¹¹, it would be more faithful to Simon's view to simply put forward the consideration that the decider is not stupid enough to incur tiresome attention, time-consuming research, deprivation of pleasure in life and other costs in order to get a so-called optimal result whose advantages could hardly compensate for such a price to pay. Moreover, since the nature of these costs is such that any attempt to reduce them to a single monetary value risks being highly arbitrary, it is tempting to conclude that bounded rationality is the rationality of an agent who does not have the formidable capacities required to determine accurately and reach efficiently any type of mathematical maximum but who has the capacity to choose what is good enough with the

¹⁰ On this point, see Mongin, 1986b and Conlisk, 1996.

¹¹ Such a meta-optimization being subject to all the objections raised by those who defend the idea of bounded rationality. For a technical discussion of this type of infinite regress, see part 4 of Mongin 2000.

sound judgement of those persons characterized above as being not stupid.

Rationality or consistency

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In any case, a few years before Simon developed his theory, economists, who are fond of the precision of mathematical language but who also enjoy having their science count among the empirical sciences, took a new step in the transformation of the concept of rationality. Although the conception of rationality which is pictured by indifference curves no longer supposes any cardinal measure of utility, it still relies on a comparison of preferences which, being psychological entities, can hardly be analyzed with the usual tools of economists. Such preferences were the only thing left from Turgot's conception of rationality as a way to behave in accordance with easily imputable preferences, but their subjective and psychological character excludes the possibility that the comparisons between them, which are presupposed by the economic analysis, be made on an empirical basis. With the next step in the modelisation of rationality taken mainly by Paul Samuelson, rational choices are no longer deduced from a comparison of preferences but it is preferences which are revealed through observable choices. The fact that choices are observable, by contrast with preferences which are not, was an important development from the point of view of the empirical character of the theory, and the fact that, on this basis, the main tenets of economic theory could be deduced with the help of a few axioms allowed economists to push still further the development of formalization and of modelisation.

[18]

However, with such an approach, rationality was no longer defined by efficiency in a process oriented towards maximization of preferences. It was rather defined as sheer consistency in choice making. Since preferences remain unrevealed by inconsistent choices, the first axiom of revealed preferences implies that if some good X is revealed as superior to another good Y, then Y cannot in turn be

revealed superior to X. It is true that this consistency approach to rationality far from implies a rejection of maximization. It was even one of the contentions of Houthakker's classic 1950 paper that a consistency approach is complementary to an approach based on utility maximization. In any case, the logical requirements of this first axiom seem to be so weak that, at first glance, the very idea that it could not be implied by any conception of rationality appears rather odd. However, whether or not it is right to claim that such consistency in choices is a necessary condition of rationality understood in the more traditional way, it can hardly be considered as a *sufficient* condition. Indeed, as emphasized by Amartya Sen (1987, p. 70b) a person can do *in a perfectly consistent fashion* the exact opposite of what would be suggested by this person's objectives. The fact that consistency is totally independent of any particular objectives or goals ascribable to those who make the choices illustrates how the modern attempt to associate rationality with consistency pushes this formalized notion of rationality still further away from the fundamental principle of rationality. If consistency is not a sufficient condition of rationality in the usual sense of the word (even when understood as maximization), it cannot be treated as a criterion of rationality short of stripping this notion of one of its essential dimensions, but it is possible to go further and claim that consistency is even far from being a *necessary* condition of rationality.

A first consideration in this respect is that the notion of consistency introduces into the concept of rationality an intertemporal dimension or a sequentiality which was in no way associated with any previous concept of rationality (including rationality understood as maximization) and which threatens to transform its meaning dramatically. This fact implies that rational agents, rather than being committed to maximizing their preferred objective at any moment in time (the notion of preferred objective no longer has a definitional function in this approach), are committed to being consistent over time with previous choices they made in order to reach whatever objective they might have.

[19]

Indeed, consistent choices cannot be considered simultaneous since the idea behind revealed preferences is that, in contrast with unrevealed preferences, choices can be observed and that, to be

observed, the various choices of a single individual have actually to be made at different points in time. Indeed, inconsistent choices simultaneously adopted by an agent would be not only contradictory but unobservable since they could not be simultaneously actualized. The intertemporal character of this conception of rationality implies that any change of taste is excluded since, once someone has declared by a choice that X is preferred to Y, no change in tastes can be allowed since it could mean that Y has been reevaluated to a degree sufficient to make Y preferred to X. It is true that a time period can be defined during which changes in tastes would be excluded for the sake of consistency until some (still to be specified) changes in the parameters of the situation would reintroduce some room for them, but such an *ad hoc* delimitation of the time period would introduce such a degree of arbitrariness in the characterization of alleged axioms that it could hardly be adopted by proponents of formal models. Typically, economists have preferred to forget about changing tastes by assuming that rational agents are omniscient. That is to say, that they have nothing to learn and thus no reason to experience changes in tastes. However, the assumption of omniscience is a high price to pay when the gain is nothing more than the substitution of a purely formal notion of rationality to the more realistic notion which describes the way people usually behave. Such a substitution may facilitate the development of highly formalized and even axiomatised models, but recent developments emphasizing disequilibrium, imperfect information, bounded rationality, learning, the search for information, etc. rest uncomfortably, to say the least, with the postulation of a world which exclude changing tastes for the sake of a rigid notion of consistency.

In fact, changing tastes is not a very popular topics among economists the "overwhelming majority [of whom] took the attitude that it is not their business to be concerned with these changes of taste" (Weizsäcker, 1971, p. 345). It would be beyond the scope of the present paper to survey the relatively scarce economic literature on changing tastes, but in the closely related debate on myopia and inconsistency which has been going on over a few decades, beginning with R. H. Strotz's pathbreaking paper (Strotz, 1955-56) which opposed myopic and sophisticated decision-makers to Peter Hammond's (Hammond, 1976) paper which distinguished "essential

consistency" and "essential inconsistency", the question of the difficult cohabitation between changing tastes and consistency has been either openly avoided or coped with in a hardly convincing fashion. The most radical and [20] systematic attempt to eliminate this cumbersome problem was probably Stigler and Becker's famous paper entitled "De Gustibus Non Est Disputandum" which claims that basic tastes are stable and does not really change (Stigler and Becker, 1977, p. 77). Adopting Becker's well-known approach according to which all human activities, even activities such as playing music and taking drugs, have a price its argument allows one to think that one might in a perfectly consistent way choose A over B after choosing B over A insofar as these different choices could be explained by differences in prices. However, this heroic attempt to deliver economics from the problem raised by changing tastes succeeds very doubtfully in explaining why, among people who are supposed to be endowed with the same basic tastes, some choose to turn to drugs and others to music. In brief, it is difficult not to see the postulate of stable basic tastes which does not "differ importantly between people" (p. 76) as one of the most extravagant attempts to eliminate a usually denied (but nonetheless persistent) source of embarrassment for the conception of rationality that modern economists were led to adopt in order to satisfy the requirements of a certain type of modelisation. After all, the problem of changing tastes has been described as "troublesome" (Peleg and Yaari, 1973, 391) and as a field in which "the perils are extreme" (Marschak, 1978, p. 386) by some of the relatively rare economists who have dealt with it.

It is noteworthy that previous conceptions of rationality made room for change in tastes among the phenomena that an economist had to deal with. Alfred Marshall, for example, considered not only the consequences of various changes in fashion but he also included widespread changes of tastes, for example, among the factors which can affect the demand for meat or fish (Marshall, 1966, p. 308). Carl Menger, for his part, considered changes of tastes and the "capacity of human need to grow" as the decisive factors affecting the very nature of a good, the satisfaction that it can produce, and therefore its subjective value and attractiveness in the process of exchange (Menger, 1976, pp. 65, 82, 83). Later economists using indifference curves models could equally deal with changes in tastes. In cases

where learning or any kind of experience was responsible for one's change in tastes (or in preferences) implying that one's set of choices be modified accordingly, these economists could cope with such modification in preferences without concluding to irrationality. Indeed, such a change in tastes could simply be described as a move in the set of indifference curves. To be sure, complex computational problems might result, but change in tastes has little to do with irrationality when it is analyzed in the context of an indifference curves model. It is true that changing tastes were nevertheless never very welcome in economics. The law of diminishing returns as well as the law of [21] increasing marginal rate of substitution, required that tastes remain fixed since they referred implicitly to a succession of choices. Thus, when discussing the law of diminishing returns, Marshall was careful enough to elucidate the "implicit condition" requiring "that we do not suppose time to be allowed for any alteration in the character or tastes of the man himself" (Marshall, 1966, p. 79). However, while the rationality principle was embodied in these laws, it was not identical with them ; they were rather applications of this principle in situations overtly characterized by the absence of "any alteration" in tastes.

With the models which were developed in the wake of revealed-preference theory, the situation is very different. As we have seen, any sheer change in tastes has to be interpreted as a case of irrationality. Now, such a claim is very odd, since rationality is usually associated with adaptability and opposed to rigidity. For example, when, in a paper rather unrepresentative of his usual approach, Gary Becker attempted to prove that some important conclusions of economics could be derived even with *totally irrational* agents, he spontaneously illustrate such total *irrationality* with the rigid behaviour of an individual who always (consistently) react the same way without considering changes in his or her) environment (Becker, 1962). It would seem reasonable, indeed, to flatly characterize as irrational the behaviour of an individual who reacts with such a rigidity in the event of a changing environment ; but what about an individual who reacts with the same rigidity in the event of changing tastes, given that tastes can be considered as an aspect of one's inner environment ? Since rationality is usually thought of as a propensity to adapt various means to any goal, it would appear reasonable to assume that a rational

individual would manage to adapt his (or her) actions to any change in goals resulting from the evolution of his (or her) tastes. David Hume, who is usually credited along with Thomas Hobbes as being the first to posit rationality as the basis of a theory of action, heralded such a view of the matter, when he declared that reason had to adapt itself to serve the *fluctuating* whims of its master, the passions (Hume, 1978, III, II, §II).

In any case, the notion of consistency as a surrogate for rationality was mainly associated with a few axioms among which independence and transitivity are the most widely invoked. Let us consider first the axiom of independence (or more precisely, the axiom of context independence) which requires that anyone who chooses X from a set limited to X and Y should not choose Y from a larger set including X, Y and any other element like Z. In a paper entitled "Why be Consistent ?" (Sugden, [22] 1985), Robert Sugden has clearly shown that consistency understood as context independence is not a necessary condition of rationality.¹² To substantiate his point, he shows that this axiom of independence, which is presented by him as an apparently innocuous rule for minimal consistency is violated by a behaviour associated with regret which can hardly be characterised as irrational. It seems rational, indeed, when choosing between two actions, to integrate into the evaluation the displeasure caused by regretting not to have chosen another action which was feasible. However, as carefully illustrated by Sugden, depending whether or not a third action is available, the evaluation of the possible regrets to be included in the evaluation of the two first actions might suggest a choice of either X or Y. Thus, the fact of choosing X over Y when only X and Y are available does not imply that Y should not be chosen over X when other actions are made available in addition to these. This conclusion clearly denies that rational choice implies even the minimal consistency which is embedded in the axiom of context independence.

In fact, in rejecting the necessity of consistency, Sugden claims that rationality supposes adaptation and excludes rigidity : the best choice crucially depends on the possibilities available in the

¹² For a much earlier challenge to the rationality of consistency, see May 1954, pp. 1-13, especially part III.

environment. He illustrates his point further in a pleasant and straightforward fashion with the help of a version of Gibbard's marriage game (Sugden, 1985, pp. 178-180). Bill will choose not to marry Annie if there is nobody else who would marry her, but knowing that Charlie would, Bill (who is jealous) chooses instead to marry her. Being single or married will be alternatively chosen in this case depending on the presence of another alternative in the set of possibilities. Note that in Sugden's example, Bill's apparently inconsistent yet instrumentally quite rational decisions still suppose that preferences are ordered and stable. No change in tastes is implied since Bill may know in advance whether Annie has a mate in the offing and his preferences are fixed accordingly from the outset. In fact, Sugden analyses other aspects of this example in the context of game theory, but one can expand on it in another direction by supposing that Bill doesn't know anything about the existence of Charlie (omniscience being excluded) and that, according to his assumed preferences, he decides not to marry Annie, but changes his mind when Charlie appears. In this case, one can even say that a change in his preferences (or in his taste) brought Bill to violate the context independence axiom without concluding [23] that he is irrational for all that. To exclude such violation, one would have to suppose that Bill *has* stable preferences ranked in the fashion suggested by Sugden's example : being single is preferred to marriage with Annie which is itself preferred to the prospect of Annie marrying any unwelcome suitor. But this would suppose that Bill knows all possible states of the world, including ones that he can hardly imagine, and his preferences (including his own feelings for Annie) in the case of any of them. For example, it is quite possible that if an unknown but, in Bill's eyes, agreeable person by the name of Johnny had come along instead of Charlie, Bill would have preferred to see Annie marry this fellow rather than get engaged with her. It is quite possible indeed that Charlie but not Johnny provokes Bill's jealousy. Why would it be irrational for Bill to change his mind and to adapt his decision to this unexpected situation ? Is it conceivable that preferences for states of the world which are not known and possibly not imaginable be ordered in advance in such a fashion that any such changes are precluded ? Short of absolute omniscience, preferences have no reason to be stable and still less to be independent of the context. As we have seen, dissociating rationality from consistency is

far from being counterintuitive. A commitment to consistency in a situation of changing contexts or in a situation of changing preferences would be nothing but an irrational adoption of rigidity rather than adaptation ; it would be an irrational and stupid rejection of a clearly preferred alternative. Since the gap between rationality defined as consistency and the principle of rationality now turns out to looks more and more like an incompatibility between these two conceptions of rationality, it is not surprising to see the challenges to the so-called axiom of rationality made in the name of the principle of rationality.

What about the still more respected axiom of transitivity (or of acyclicity) ? This axiom requires that if A is revealed to be preferred to B and B to C, C cannot be revealed to be preferred to A. One of the most popular argument among those who defend the idea that transitivity is just another face of rationality understood in the more instrumental fashion associated with utility maximization is the so-called money pump.¹³ The idea is that transitivity might be taken as a necessary condition of utility maximization. Indeed, intransitive choices must "lead to poverty" since, by hypothesis, they can bring a trader back to the same point after a succession of costly transactions aimed, in each case, at getting [24] something which is deemed preferable. Being in possession of A and preferring C to A, I am ready to pay an extra amount of money to get C in exchange of A, but preferring B to C, I will do the same in order to get B ; at this point, if due to my intransitive preferences, I also prefer A to B, I will pay again to obtain A and, after paying a sizable amount of money, to come back exactly where I was at the beginning of the process. Since such a process should continue indefinitely according to the same logic, any amount of money will be pumped out of my pockets in such a way that this state of affairs is thought to illustrate the close connection between the consistency and instrumental approaches to rationality.

However, this curious argument is not as compelling as it may appear to be at first glance. First, let us note that the eventual

¹³ This argument was developed by Davidson & *alia*, 1955 ; for a recent and particularly straightforward version of it, see Hargreaves Heap 1998 from which the phrase "lead to poverty" is borrowed.

impoverishment of the trader in question can be associated with irrationality only if stability of preferences is assumed. Here again, it is manifest that such a notion of transitivity excludes any change in taste and, for the reasons explained above, implies omniscience. Changing preferences during a progressive learning process can be intransitive in a very rational way : I can prefer B to A and C to B and consequently make the appropriate exchanges, but then, after discovering the hidden merits of A begin to be fed up with C and be happy to pay something to possess A anew. Indeed, I would just maximize my benefits if, by these successive exchanges which are not so costly after all, I manage to be in possession of either A, B or C precisely during the respective period of time in which I was enjoying each of them maximally. In such a situation, intransitivity seems even to be required by rationality understood as adaptive behaviour.

Moreover, the money pump argument was subject to other objections which do not invoke changing tastes. In his 1986 paper entitled "Dutch Bookies and Money Pump", F. Schick claims that the money pump argument wrongly supposes that the values on the basis of which a choice is made at each step is independent of the fact that these choices are made in a succession of arrangements which lead to poverty. According to Schick, such a postulate is false for the "obvious reason" that an agent aware "of being exploited" might "well reject the offer and this stop the pump" (Schick, 1986, p. 117). Thus intransitivity is irrational only when joined to a postulate implying incapacity to consider more than one step together. An agent who does not suffer from such a cecity can have intransitive [25] preferences without being irrational. As clearly explained by Mongin (2000, p. 85) in slightly different words, one who is tempted to choose B over C needs only to anticipate the coming opportunity to choose A, which is preferred to B, when being aware that the available C is (intransitively) preferred to A, to be convinced that it would be silly to choose B over C. Indeed, why do so when C that is preferred to A (for which B is doomed to be exchanged) is already available ? At the very least, one would stop being pumped after a few steps in the process. From the point of view of this paper, the important point is that for

Schick, Mongin and others who challenge ¹⁴ the money pump argument, the decisive test of rationality cannot be associated with a criterion such as transitivity but with the fact that people are not stupid enough to be consciously involved in a process which fools them.

It is true that defeating the money pump argument is not sufficient to disqualify transitivity as a criterion of rationality. However, the least that can be said is that transitivity would be a rather cumbersome criterion to use. To recycle an example that Alexander Rosenberg (1992, p. 119) used in a slightly different context, let us observe that it is surely not irrational to intransitively express a preference for regular coffee over milk at breakfast, milk over decaffeinated coffee at lunch, and the latter over regular coffee at dinner. However, as admitted by Rosenberg himself, in order to save transitivity economists might construct artificial bundles of goods corresponding to each kind of possible succession of preferences and assume that consistent choices are made among such more complex "goods". However, transitivity defined among such complex goods would tend to loose its very meaning. Indeed, let us consider what would happen if we push this kind of solution a step further after extending the example to an apparently not unreasonable preference for a life with significantly contrasted experiences. Should we denounce as irrational such a preference for variety (even if it turned out to be a preference for purely fanciful variety in life) over the dull monotony of a life continuously characterized by the same (allegedly preferred) satisfactions repeated everyday and every year? But, if such a preference for variety in satisfactions is accepted as rational, transitivity (and stability of preferences) would be saved only by considering that a whole life structured in a fanciful fashion is the bundle chosen. But in this limiting case, the very ideas of rational choice, of [26] revelation of preferences, and of transitivity would become vacuous. Indeed, the most whimsical life chosen in a single shot and as a whole bundle would surely be the object of a stable preference, but it could not be compared with any other bundle in such a way that one of them is revealed superior. Without a variety of punctual choices to be compared, the ideas of revealed preferences

¹⁴ For a different and minimal way to present a similar objection to the money pump argument, see Anand, 1987, pp. 200-201.

and of transitivity would have no meaning at all. Either one admits that preferences are not stable, and then transitivity is no longer a condition of rationality, or preferences are artificially made stable, but, then, less and less room is left for choice and rationality themselves.

The objections to the modern notion of rationality considered up to now were made from the point of view of economists or methodologists discussing the basis of pure economic theory. Let us look now at the somewhat more aggressive challenges to the same notion of rationality made by academics associated with experimental psychology whose arguments have drawn increasing attention from economists in relation to the recent development of experimental economics. Here again, it is noticeable that when a challenge is made to the notion of rationality adopted by modern economics, a more intuitive notion of rationality, much closer to the rationality principle as such, is invoked. Amos Tversky's papers raised some of the most trenchant objections against the so-called axioms of rationality. Against models based on transitivity (even in its weak stochastic form), Tversky (1969) systematically analyses how "consistent patterns of intransitive choices" are generated. Tversky's point is largely based on the legitimacy of deciding in accordance with a structure characterized as a "lexicographic semiorder" and illustrated by the oft-cited example of the employer who has to choose between three candidates that are ranked both by IQ and by experience. The employer can, in a quite reasonable fashion, estimate that a difference of five points or less in IQ can be considered insignificant and, in such a case, base his choice on experience. Thus, with candidates X, Y and Z whose IQ are respectively 120, 124 and 128 but whose experience (varying in the opposite direction) is respectively 20, 15 and 10 years, X will be preferred to Y (since their IQ being roughly the same, experience will prevail), Y will be preferred to Z (for the same reason) but Z will be preferred to X (given Z's clearly superior IQ). In such a case, a procedure that can surely not be said to be irrational leads to intransitive behaviour. Tversky even proposes a more general and satisfactory approach to this method of choosing that is seen as an application of what he calls an "additive difference model", a theoretic model of choice that, from the point of view of a rational decider,

offers various advantages [27] even if it can lead to intransitivities.¹⁵ In any case, what I would like to underscore here is not the traits of the model itself, but the fact that to explain this preference for a model which systematically implies intransitivities, Tversky invokes, like Simon, the "cost involved in evaluating alternatives" (Tversky, 1969, p. 46). In challenging the received view of rationality and in saving rationality in spite of intransitivities, Tversky has no need to base his arguments on principles foreign to economic wisdom ; he proposes to include in the cost side of the decider's analysis, the cost of further evaluation as more and more economist have done since Stigler proposed his search theory (see Stigler, 1961). For Tversky, it seems clear that being rational does not mean to be constrained by an axiom like transitivity. Being rational means rather not to be stupid enough to be involved in costly evaluations only to lose, due to a too heavy process of evaluation, more than what would be gained from having the advantages of greater precision. In fact, if economists as well as Tversky are right to take into consideration the "cost involved in evaluating alternatives", it is because they reasonably think that, by avoiding incurring such costs, agents behave "in a manner appropriate to the situation" and manage to avoid "important unfavorable consequences", whatever the consequences for the notions of rationality based on transitivity (or even on maximization). It is nothing but this fundamental rationality principle that those who challenge economic models of rationality necessarily invoke in order to explain that the allegedly irrational behaviour considered was adopted because it was not so irrational after all.¹⁶

In another important paper, written with Kahneman, Tversky also challenged the context independence axiom by showing that in various circumstances people significantly choose in a way that is dependent on the "frame" in which the situation is presented. But, here again, the authors conclude that such dramatic "preference reversals" which apparently betray "errors of choice or judgment" are not "necessarily irrational" since the incriminated behaviour can at

¹⁵ For a discussion of Tversky's approach, see Mongin, 2000, p. 80 *ff.*

¹⁶ Other contributions defend the rationality of behaviour conflicting both with independence and transitivity axioms, (e.g. Anand, 1987) or providing ingenious rational explanations of various cases of apparently irrational behaviour (e.g. Bar-Hillel & Margalit, 1988).

least sometimes be justified (or explained) "by reference to the mental effort required to explore alternative frames and avoid potential inconsistencies" (Tversky and Kahneman, 1986, p. 138). Here again, the authors are clearly sensitive to the cost of supplementary research and deliberation, but, this time, they propose to [28] replace the rational choice model by a model called the "prospect model" which, among other things, accounts for differences in risk aversion in relation to the situation. Discussing this somewhat complex model would be beyond the scope of this paper, but I would like to draw attention to the fact that, to justify it, the authors observe that "a man could be judged irrational either because his preferences are contradictory or because his desires and aversions do not reflect his pleasures and pains"(p. 138). Consequently, the allegedly irrational behaviour of those who, when facing equivalent problems, make inconsistent choices depending on the frame in which the alternatives are presented might be rational after all if we consider that they behave in such a way that their desires and aversions correctly reflect their pleasures and pains. Here again, a successful challenge to the axioms of rationality turns out to be possible only because the challengers invoke a more fundamental rationality principle according to which people are not stupid enough to incur the heavy pain associated with risk only in order to be consistent with the choices they have previously made.

In recent decades, among the objections to the economic notion of rationality raised by psychologists, it is perhaps those concerning preferences reversals that have aroused the most systematic attention by economists. In a few joint papers, psychologists Sarah Lichtenstein and Paul Slovic ¹⁷ have established that, for a significant number of people, preferences between two lotteries, which should be revealed when they bid to obtain the right to play those lotteries, are dramatically reversed when they are offered the occasion to play only one of them. Typically, a significant number of people among those who are ready to pay more for a lottery of which the prospect of money gain is larger than for a lottery with comparable expected utility that offers safer probabilities of gain, tend to opt for the safer

¹⁷ See Lichtenstein and Slovic, 1971 and 1973 which are based on the findings of Slovic and Lichtenstein, 1968.

one when they are invited to play one of these lotteries. However, this inversion of preferences is not observed, at least not to a significant degree, in the opposite case : those who choose to play the riskier lottery will rarely bid more for the safer one. This phenomenon, which contradicts the most basic principles of rational choice theory, has been intensively discussed by psychologists and economists who invoke various kinds of circumstances to explain it. Lichtenstein & Slovic (1971) did not conclude that irrationality was involved but invoked, like Tversky, the fact that the subjects adopt a strategy of approximation given the cost of "evaluating alternative strategies" (p. 55). Among [29] the economists who discuss the questions, Grether & Plott (1979), after conducting their own set of tests, were convinced, against their own expectations, of the robustness of the observations establishing preference reversals. On the basis of this new evidence, they discussed thirteen possible explanations of the phenomenon and rejected most of them but one – and even this was not very compelling in their view – which was incompatible with the context independence axiom of rationality. Nonetheless, they concluded that economists's preference theory must be preserved since there is "no alternative theory currently available" (p. 634). Loomes & Sugden (1983) claim that their regret theory can predict the preference reversal phenomenon once the transitivity axiom is dropped and they even claim that, when explained in such a way, preference reversal is nonetheless consistent with the "presumption that individuals are rational, optimizing agents" (p. 431). Holt (1986) proposed instead to drop the Von Neumann-Morgenstern independence (or substitution) axiom (which must not be confused with the context independence axiom referred to above ¹⁸), a move which allows him to ingeniously, albeit not very convincingly, explain preference reversal as a rational but highly complex choice involving lotteries about lotteries. When he came back to this question in 1996, Charles Plott explained this erratic phenomenon by insisting on the role of a progressive discovery of the rational attitude implied by expected utility theory. While extremely schematic and incomplete, this overview of the debate over this curious phenomenon is sufficient to conclude that, when facing seriously such a cumbersome phenomenon, economists do not care to save the axioms of the modern conception of rationality but rather

¹⁸ About this distinction, see Hausman, 1992, pp. 23 and 16.

prefer to show that people involved in preference reversal manage to act in a way that, although possibly inconsistent, is not so stupid after all. It is mostly when the modern notion of rationality is challenged that it becomes clear that what is fundamental for economics is not this notion and its axioms but the rationality principle as such.

During the 1990s, however, while the significance of the problem was partly reduced through new experiments allowing for the role of high incentives and learning through repetition, experimental psychologists came back to the question to draw conclusions still more radical and potentially more damaging for the very idea of rationality. Tversky, Slovic & Kahneman (1990) explain preference reversal by "scale compatibility", i.e. by the fact that greater weight is spontaneously given to data expressed in the same units. Subjects are ready to pay more for the lottery whose prospects are [30] expressed by a larger amount of dollars because they are influenced by the fact that "dollar" is the single unit of the scale to consider. However, when choosing one of these lotteries to play, they opt for the safer one because, in this case, their task does not essentially consist of evaluating two values by potentially comparing them with a single unit. The authors conclude that such behaviour implies the rejection of the principle of procedure invariance which, according to them, is still more important for the economic notion of rationality than transitivity or independence. This principle stipulates that if A is preferred to B, "the cash equivalent, or minimum selling price, of A should exceed that of B". It seems difficult indeed to characterize economic rationality without implicitly accepting this principle. In a debate with Plott held in 1996, Kahneman, on the basis of various experiments, enumerates further limitations of the economists's model of rational behaviour and proposes to economists his version of the psychologists's model of behaviour which is less elegant but better supported by evidence (Kahneman, 1996, p. 253).

The conclusion to draw from these last charges against the economic model is rather clear. Economists will continue to prefer their own model because it is more elegant and, given its generality, in principle applicable to any type of human action and psychologists will continue to pinpoint various limitations in the alleged rationality of human choices. But to what kind of limitations are we referring ? Let us consider the "scale compatibility" which is so damaging for the

principle of procedure invariance. It is true that someone who is influenced by the fact that something is already expressed in dollars when making an evaluation in dollars is acting on a largely affective rather than on a purely rational basis. But the point is that the evaluation required to make the choice is such that it cannot seriously be made without a relatively complex computation of expected utility or of another measure equally complex or at least difficult to make in the context of the quick decision that is required from the subjects (decisions to bid and decisions to play being separated in time by series of similar but numerically different problems to solve) . Saying that those subjects are nonetheless rational does not mean that they can compete with a computer in matters of calculations or even that, when expressing their preferences, they can abstract from any emotional factor which could affect their decision. It simply means that they are not stupid and that, consequently, they are deciding in an appropriate way given their knowledge and their computational abilities.

[31]

The problem faced by such subjects puts them in a situation comparable to that in which those who are submitted to the famous Allais paradox are involved. It is well known that Leonard Savage failed to respond correctly to the problem raised by the Allais paradox, since he opted for incompatible answers contradicting his own ideas on the matter. But no one would conclude for all that that the author of *The Foundation of Statistics* is an irrational and stupid fellow. He is very far from being stupid, indeed, but when choosing relatively quickly between the options proposed, he was not in position to evaluate and to make all the computations required ; consequently, in a situation which was probably a bit stressful he was influenced, as almost everybody is, by the deceptive way in which the problem is set up. When making the first choice in the Allais problem, one is usually influenced by the certainty of winning a large amount whereas, in the second choice, where this certainty is absent, one is strongly tempted to decide differently even if the decision to take is strictly the same in all other respects. When facing the Allais problem or questions about lotteries raised by experimental psychologists, people look for the most appropriate solution given their goal which is in this case to provide a sane answer, but not being in position to exert

very much in the way of their computation abilities, they adopt rules of thumb (scale compatibility, presence of a sure gain) which in most situations (but not in those which are considered here) might be tolerably reliable ways to reach the most appropriate solution. Turgot and Smith's rationality principle do not really required more than this, but the axioms of rationality are quite different animals.

To be sure, one might argue that such a rationality principle is much too vague to really matter for modern economics which refers only to precise relations between variables which can find room in a well defined model able to generate sufficiently accurate predictions. In some sense, this seems quite true, but the point is that many different variables related to human behaviour can be introduced in a model in order to fit the data, whereas only those which correspond to sensible behaviour have some explanative power. Suppose that, to explain the fact that in preference reversal experiments many people pay a higher price for their less preferred lottery, I refer to the tendency of those who are riskaverse (risk-lovers being much less affected by such a tendancy) to equalize the product obtained when the amount paid for a lottery is multiplied by the utility which they attributed to this lottery when it comes to playing it. Such a theory might have interesting prospects from an empirical point of view since the inversion observed with so many who are risk-averse would be explained through the [32] predominance among them of this "product equalization" factor. Indeed, the risk-averse would play the safe probability lottery because they attribute more utility to it than to the riskier dollar lottery and would tend accordingly to pay more for it ; but for a significant number among them this "normal" trend would be overcompensated by the need to pay more for the lotteries with less utility in order to make sure that the product of these two variables for each lottery is roughly equalized. In contrast, risk-lovers (who would play the dollar lottery) who are much less affected by this factor would rather tend to pay more for their favourite lottery in conformity with what is empirically observed. But why would any sane economist or any sane person strongly resist such an "explanation" in spite of its relative empirical success ? Clearly, because it does not make sense. Someone who is not stupid might be totally unable to make complex computations, might avoid tiresome deliberations for a return judged unworthwhile and might even be influenced by

irrelevant variables whose irrelevance (e.g. in the Allais problem or in preference reversal experiments) is not self-evident. But someone who is not stupid cannot be moved by a morbid compulsion to equalize products whose equalization has no meaning at all. In other words, such a silly explanation does not comply with the principle of rationality, which is the supreme criterion for any theory to be considered in economics and in social science in general.

True, one might argue that this "product equalization" theory is totally *ad hoc* and that this is a sufficient reason to reject the so-called explanation without any help from the principle of rationality. But which criterion allows one to judge adhocity in such a case ? If *all* lottery type situations can be "explained" with such a principle, the principle is not so *ad hoc* after all. In fact, if such a principle cannot be extended to other situations, it is precisely because, since it does not make sense, it is not possible to characterize the way it could be sensibly adapted to a situation different from the choice between lotteries. Even if, with a bit of imagination, I could show successfully that my "product equalization" factor could help fit the data in other contexts, such a tentative generalization would do nothing to reduce the adhocity of the incriminated explanation, precisely because the case which would allow one to conclude that this factor has some generality *would not make more sense* than the first and consequently would not count as another case of explanation with the help of this bizarre factor. In contrast, suppose that I observe that individuals who each have at their disposal a fixed amount of money to spend on lotteries during their whole life spend this amount, from period to period, in quite different fashions whereas it could theoretically be expected that any one of them [33] should adopt the same optimal pattern. And suppose that I explain this phenomenon by distinguishing the risk-averse who tend to equalize for each period the amount obtained by multiplying the quantity of lotteries bought by the utility attributed by them to the chosen lotteries whereas risk-lovers do not bother with such an equalization. I would have invoked a principle which, at first glance, looks as much *ad hoc* as the one used above, since it explains only the situations of the type described. However, this principle could not be dismissed as *ad hoc* because it makes sense in such a situation and can be *interpreted* as a variant of a more

general principle of equalization of utility over time which appears sensible for someone who doesn't like risk.

* * *

Economists are right to construct models which imply a much more precise notion of rationality, whether this notion is characterised through maximization or through transitivity, reason being that such models, built up with precisely defined variables which are related together through functions equally well defined, are often necessary to understand important mechanisms. However, they are wrong to think that the concept of rationality that they have constructed in this connection can replace the vaguely defined but fundamental rationality principle. As claimed by Popper (1985), any model in the social sciences needs to be animated by the rationality principle. The trend in neoclassical economics has been to integrate this animating principle into the model itself or, more precisely, to transform it into a particular element of the model. The increasingly formalized and even axiomatised concept of rationality which was developed in this fashion was necessarily increasingly distanced from the genuine rationality principle. As we have seen, this principle remains open to various interpretations – all the heterodox approaches to economics and all the variants of bounded rationality are based on it as much as standard neoclassical economics is – whereas the process of modelisation which characterizes the development of neoclassical economics aims precisely to eliminate this polyvalence from the notion of rationality. However, throughout this process, the notion of rationality has been put in a kind of straightjacket and the rationality principle in its full generality has been almost forgotten. Thus, when the notion of rationality associated with such modelisation was systematically challenged in recent decades, the challenge was necessarily based on the rationality principle when it consisted in demonstrating the plausibility of a behaviour deemed to be irrational according to this notion of rationality. Paradoxically enough, the challenge to the axioms of rationality turns out to be a vindication of the almost forgotten genuine rationality principle.

[34]

However, given that attempts to translate this genuine rationality principle into a set of axioms are unsuccessful or, at least, too reductive, the question of the status of this principle remains a difficult epistemological question for methodologists. It is this question that Karl Popper attempted to answer in the paper mentioned above. Whatever the correct interpretation that should be given of Popper's paper, it is difficult not to face the problem it raises. On the one hand, the rationality principle can hardly be accepted as an empirical truth and, from this point of view, it is perfectly challengeable. But, on the other hand, this principle (or its avatar) is the animating principle of any model designed to explain phenomena dealt with in the social sciences and, from this point of view, it cannot be dismissed and is, in this sense, virtually unchallengeable. I do not necessarily agree with Popper's treatment of this question, but I agree that this apparent contradiction must be resolved by recognizing the very special status of the rationality principle which cannot be treated as a simple postulate neither since, being required by any of the social sciences, it is not attached to a particular theory. From this point of view, the conclusion of the present historical and critical discussion of the notion of rationality in economics is that, once it has been sufficiently transformed to be made a part of a model, rationality becomes a specifically defined hypothesis that is challengeable like any other part of such a model. This explains why so many devastating arguments have been raised against the axioms of rationality in recent decades. However, since the rationality principle preceded and made possible any attempt at modelisation, it must be treated as a possibility condition of any model in the social sciences or, as I prefer to put it, as a condition of intelligibility. In some sense, such a condition is unchallengeable because rejecting it would be tantamount to rejecting the very idea of understanding what is going on in economics. It is for this reason that those who challenged the rationality axioms had no choice but to invoke rationality principle under one of its forms in order to show that their rejection of those axioms does not render economic behaviour unintelligible. It is also for this reason that any discussion of rationality in economics is pointless if these two ways of referring to rationality are not carefully distinguished.

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Quoted works

[Retour à la table des matières](#)

Anand, Paul, 1987, "Are the Preference Axioms really Rational ?", *Theory and Decision*, 23, pp. 189-214.

Bar-Hillel, Maya & Margalit Avishai, 1988, "How Vicious are Cycles of Intransitive Choice ?", *Theory and Decision*, 24, pp. 119-145.

Becker, Gary S., 1962, 'Irrational Behavior and Economic Theory', *Journal of Political Economy*, LXX, Feb., 1-13.

Coleman, William, 1995, *Rationalism and Anti-Rationalism in the Origins of Economics*, Aldershot, Hants, Edward Elgar.

Conlisk, John, 1996, "Why Bounded Rationality ?", *Journal of Economic Literature*, 34, pp. 669-700.

Davidson, D., J. C. C. McKinsey and P. Suppes, 1955, "Outline of a Formal Theory of Value, I", *Philosophy of Science*, vol 22, p. 140-160.

Friedman, Milton, 1953, 'The Methodology of Positive Economics', pp. 3-43, in Friedman, Milton : 1953, *Essays in Positive Economics*, University of Chicago Press, Chicago.

Grether, David & Plott, Charles, 1979, "Economic Theory of Choice and the Preference Reversal Phenomenon", *American Economic Review*, 69, pp. 623-638.

Hammond, Peter J., 1976, "Changing Tastes and Coherent Dynamic Choice", *Review of Economic Studies*, 43, 159-173.

Hausman, Daniel, 1992, *The Inexact and Separate Science of Economics*. Cambridge, Cambridge University Press.

Hausman, Daniel et Philippe Mongin, 1997, "Economists' Responses to Anomalies : Full-Cost Pricing versus Preference Reversals in Davis, John B. (ed.), *New Economics and its History*,

annual supplement to vol 29 of History of Political Economy, Durham, Duke University Press.

Hargreaves Heap, Shaun, 1998, "Rational choice" in Davis J., W. Hands & U. Mäki, *The Handbook of Economic Methodology*, Cheltenham, UK, p. 400.

Hicks, J. R. & Allen, R. G. D., 1934, "A Reconsideration of the Theory of Value", Part I (by J. R. Hicks), *Economica*, February, pp. 52-76.

Hollis, Martin and Robert Sugden, 1993, "Rationality in Action", *Mind*, 102, pp. 1-35.

Holt, Charles, 1986, "Preference Reversals and the Independence Axiom", *American Economic Review*, 76, 3, pp. 508-515.

Houthakker, H. S., 1950, "Revealed Preference and the Utility Function", *Economica*, 17, pp. 159-174.

Hume, David, 1978, *A Treatise of Human Nature*, Oxford, Clarendon Press, 1740.

Kahneman, Daniel, 1996, "New Challenges to the Rationality Assumption" in Arrow, Kenneth, J. and *alia*, 1996, *The rational foundations of economic behaviour: proceedings of the IEA Conference held in Turin*, London, Macmillan, pp. 203-219 with a Comment by Charles Plott, pp. 220-224.

Lagueux, Maurice, 1994, "Friedman's 'Instrumentalism' and Constructive Empiricism in Economics", *Theory and Decision*, vol 37, pp. 147-174.

Lichtenstein, Sarah and Paul Slovic, 1971, "Reversals of Preferences between Bids and Choices in Gambling Decisions", *Journal of Experimental Psychology*, 89, 1, pp. 46-55.

Lichtenstein, Sarah and Paul Slovic, 1973, "Response-induced Reversals of Preference in [36] Gambling- an Extended Replication in Las Vegas", *Journal of Experimental Psychology*, 101, 1, pp. 16-20.

Loomes, Graham & Sugden, Robert, 1983, "A Rationale for Preference Reversal", *American Economic Review*, 73, pp. 428-432.

Machlup. Fritz, 1955, "The Problem of Verification in Economics", *The Southern Economic Journal*, 22, 1-21.

Marschak, T.A., 1978, "On the Study of Taste Changing Policies", *The American Economic Review*, 68, 386-391.

Marshall, Alfred, 1966, *Principles of Economics*, 8th ed., London, Macmillan, 1920.

May Kenneth, 1954, "Intransitivity, Utility, and the Aggregation of Preference Patterns", *Econometrica*, 22, pp. 1-13

Menger, Carl, 1976, *Principles of Economics*, (translated from German), New York, New York University Press.

Mill, John Stuart, 1948, *Essays on some Unsettled Questions of Political Economy*, London, London School of Economics, (originally written in 1836).

Mongin, Philippe, 1986a, "La Controverse sur l'entreprise (1940-1950) et la formation de l'irréalisme méthodologique", *Économies et Sociétés*, "Oeconomia", PE, no 5, 91-151.

Mongin, Philippe, 1986b, "Simon, Stigler et les théories de la rationalité limitée", *Rationality and Society/ Rationalité et Société*, Informations sur les sciences sociales, London, SAGE, pp. 555-606.

Mongin, Philippe, 2000, "Does Optimization Imply Rationality ?", *Synthese*, 124, pp. 73-111.

Peleg, Bezalel and Menahem E. Yaari, 1973, "On the Existence of a Consistent Course of Action when Tastes are Changing", *Review of Economic Studies*, 40, 391-401.

Plott, Charles, 1996, "Rational Individual Behaviour in Markets and Social Choice Process" in Arrow, Kenneth, J. and *alia*, 1996, *The rational foundations of economic behaviour : proceedings of the IEA Conference held in Turin*, London, Macmillan, pp. 225-250 with a Comment by Daniel Kahneman, pp. 251-254.

Popper, Karl, 1985, "The Rationality Principle", in Miller, D. (ed.), 1985, *Popper Selections*, Princeton University Press (previously published in 1967 in French translation under the title "La rationalité et le statut du principe de rationalité").

Ricardo, David, 1951... *Works of David Ricardo*, vol I-VI, Cambridge, Cambridge University Press.

Ricardo, David, 1952, "Ricardo to Malthus, 22 October 1811" pp. 63-65 in *Works of David Ricardo*, vol VI, Cambridge, Cambridge University Press.

Rosenberg Alexander, 1992, *Economics - Mathematical Politics or Science of Diminishing Returns ?*, Chicago, The University of Chicago Press.

Schick, Frederic, 1986, "Dutch Bookies and Money Pump", *The Journal of Philosophy*, 83, pp. 112-119.

Sen, Amartya, 1987, "Rational Behaviour", *The New Palgrave, A Dictionary of Economics*, vol. 4, London, Macmillan.

Simon, Herbert, 1978, "Rationality as process and as product of thought", *American Economic Review*, 68, pp. 1-16.

Slovic, Paul and Sarah Lichtenstein, 1968, "Relative Importance of Probabilities and Payoffs in Risk taking", *Journal of Experimental Psychology*, 78, 3, part 2, 1-18.

Smith, Adam, 1937, *Inquiry into the Nature and Causes of the Wealth of Nations*, New York, Modern Library.

[37]

Stigler, George, 1961, 'The Economics of Information', *Journal of Political Economy*, 69, 213-225.

Stigler, George and Gary Becker, 1977, "De Gustibus Non Est Disputandum", *The American Economic Review*, 1977, 67, 76-90.

Strotz, R. H., 1955-56, "Myopia and Inconsistency in Dynamic Utility Maximization", *Review of Economic Studies*, 23, 165-180.

Sugden, Robert, 1985, "Why be Consistent ? A Critical Analysis of Consistency Requirements in Choice Theory", *Economica*. 52, 167-183.

Turgot, Turgot, 1970, A. M. J., *Écrits économiques*, Paris, Calmann-Lévy.

Tversky, Amos, 1969, "Intransitivity of Preferences", *Psychological Review*, 76, 1, pp 31-48.

Tversky, Amos and Daniel Kahneman, 1986, "The Framing of Decisions and the Psychology of Choice", in Elster, Jon (ed.),

Rational Choice, New York, New York University Press, pp. 123-141 ; published earlier (1981) in *Science*, 211, pp. 453-58.

Tversky, Amos, Paul Slovic and Daniel Kahneman, 1990, "The Causes of Preference Reversal", *American Economic Review*, 80, pp. 204-17.

Weizsäcker, Carl Christian Von, 1971, "Notes on Endogenous Change of Tastes", *Journal of Economic Theory*, 3, 345-372.

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