

Bounded rationality and organisational economics

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In very overall terms the existing research efforts on bounded rationality may be understood as a very diverse set of attempts to elaborate and examine the insights that 1) the human capacity to process information is limited (Simon, 1955), 2) humans try to economise on cognitive effort by relying on short-cuts ('heuristics'; Simon and Newell, 1972), and 3) because of 1) and 2), as well as other factors, such as the influence of emotions on cognition, human cognition and judgment is subject to a wide range of biases and errors (Tversky and Kahneman, 1986; Rabin, 1998).

Economists' thinking about the role of rationality (bounded as well as full) has surprisingly often been done with reference to the business firm. Thus, the issue has been highlighted in debates ranging the descriptive validity of profit maximisation in the 1940s over Herbert Simon's criticism of oligopoly theory (Simon, 1979) to modern debates on incomplete contracting and therefore issues that are central to new institutional economics, such as efficient firm boundaries (e.g., Williamson, 1985; Hart, 1990; Tirole, 1999). The reason why economists have associated firm organisation and BR arguably lie in the inherent complexity and uncertainty of decisions relating to competitive strategy, investment decisions, the design of human resource management systems, etc. By comparison most consumption choices seem relatively simple and more given to a treatment in terms of the standard maximising model. Recently, bounded rationality ('BR') has, under the banner of behavioural economics, neuroeconomics, and so on, been generalised much beyond the theory of the firm context, and appears prominently in finance, law and economics, and much else. However, the theory of the firm or, more broadly, organisational economics remains an area where discussion of BR takes place, and it is of course also a stronghold of new institutional economics (Williamson, 1985, 1996; Furubotn and Richter, 1997; Brousseau and Glachant, 2003). For these reasons, most of this chapter makes reference to organisational economics.

Instead of providing a comprehensive overview of work on bounded rationality and its use in organisational economics, I shall argue that although many organisational economists have agreed on the importance of BR, upon closer inspection it turns out that BR itself is seldom explicitly modelled, organisational economists do not seem to hold precise views of what BR is and how it may be

incorporated into models (if they do, they are likely to stress different modelling approaches), and the main purpose of BR is to provide intuition for contractual incompleteness.

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Organisational economists would likely agree that BR is important to the study of economic organisation (e.g., Williamson, 1975, 1985, 1996; Milgrom and Roberts, 1992; Kreps, 1996; Furubotn and Richter, 1997). Indeed, some argue that it is indispensable, in the sense that BR is a strictly necessary assumption in the theory of economic organisation (Williamson, 1996; MacLeod, 2000). Oliver Williamson is not only the flag bearer of the modern literature, but also the most outspoken proponent of the necessity to include BR in the economics of organisation. 'But for bounded rationality,' he argues (1996: 36), 'all issues of organization collapse in favor of comprehensive contracting of either Arrow-Debreu or mechanism design kinds.' What Williamson calls 'comprehensive contracting' does not allow for 'governance structures' in the sense of mechanisms that handle the coordination and incentive problems produced by unanticipated change (Williamson 1996, chapter 4), simply because the latter is ruled out under assumptions of 'comprehensive' or complete contracting.

More generally, Williamson (1998) argues that taking more account of the relevant psychological literature will improve the understanding of organisation '... as an instrument for utilizing varying cognitive and behavioral propensities to best advantage' (Williamson 1998, p. 12). Many organisational economists would seem to concur. Following the strong general increase in interest in building insights of cognitive science into economics models, not only calls for drawing more strongly on the relevant psychology research (e.g., Lazear, 1991), but also actual modelling efforts that incorporate some notion of BR are now relatively common. To exemplify, Mookerji (1998) shows how ambiguity aversion may be a source of contractual incompleteness; Anderlini and Felli (1999) invoke costs associated with complexity to do the same, while Gifford's (1999) take on contractual incompleteness is to explain it as an outcome of the trade-off between devoting scarce attention to managing existing contracts and writing new ones may be a cause of contractual incompleteness. Hart (2007), who earlier was sceptical of the use of BR in organisational economics (Hart, 1990), now argues that an important source of the *ex post* haggling costs emphasised by Williamson (1985) may lie in contractual parties holding different reference points.

Thus, a cursory glance at contemporary organisational economics may easily convey the impression that Simon's lessons have been absorbed, and that organisational economists have realised the need to

place BR truly centre stage at their theorising. However, this would clearly be an exaggeration. The fact remains that very large parts of organisational economics have no use whatsoever for BR. In particular, the complete contracting paradigm of agency theory (Holmström, 1979) rules out BR.

More generally, most contemporary organisational economics research is entirely mainstream in character, and this also holds for most work on incomplete contracts. Formal, mainstream economics typically assumes that agents hold the same, correct model of the world and that model does not change. Organisational economics is in general no exception to this. More precisely, these assumptions are built into formal contract theory through the assumption that payoffs, strategies, and the like are common knowledge, assumptions that are clearly at odds with BR. Indeed, the game-theoretic models used in most theoretical research on the theory of the firm ignore bounded rationality altogether. Fundamental notions and modelling principles of mainstream economics, such as subjective expected utility, common priors, rational expectations/dynamic programming, backward induction, etc., are not too easily aligned with fundamental findings of cognitive psychology with a strong bearing on BR (such as gain-loss asymmetries, role-biased expectations, etc.) (Camerer, 1998). The result of the attempt to combine these notions with an attempt to make room for BR is 'hybrid models' where BR is introduced in a highly selective manner as the spanner in the works of an otherwise entirely mainstream machinery, so that agents are assumed to be boundedly rational with respect to one variable and fully rational with respect to all other variables (Furubotn and Richter, 1997; Foss, 2001).

'Thin' and 'thick' notions of bounded rationality

Many writers have observed that to the extent that BR enters contemporary economics, it is in rather 'thin' forms (Schlicht, 1990; Akerlof, 1991; Lindenberg, 1990; Lane et al., 1996; Furubotn and Richter, 1997; Macleod, 2000; Furubotn, 1999, 2001). This is also the case of organisational economics. The treatment of BR in the literature at large is a far cry indeed from the richness, concrete and 'thick' treatments of BR in the behavioural economics literature. For example, in a central chapter (5, 'Bounded Rationality and Private Information') in their well-known textbook, Milgrom and Roberts (1992, p. 128) define bounded rationality as a matter of '[l]imited foresight, imprecise language, the costs of calculating solutions and the costs of writing down a plan.' They go on to develop at length the *implications* of this in terms of imperfect contracts and subsequent problems of imperfect commitment between contractual parties. However, they do not develop or truly explain their definition of bounded rationality. In fact, it is quite arguable (see Foss, 2001, 2005) that the versions of bounded rationality that are applied in organisational economics are thin versions, in the sense that bounded rationality per

se is not explicitly modelled, but simply asserted as a sort of ‘background variable’ that functions to provide an intuitive foundation for contractual incompleteness.

In spite of his insistence on the necessity of assuming boundedly rational behaviour, Williamson is in actuality rather vague on bounded rationality. He notes that ‘[e]conomizing on bounded rationality takes two forms. One concerns decision processes and the other involves governance structures. The use of heuristic problem-solving ... is a decision process response’ (Williamson, 1985, p. 46). The latter ‘form’ is not central, however, in transaction cost economics, which, Williamson argues, ‘is principally concerned ... with the economizing consequences of assigning transactions to governance structures in a discriminating way.’ Thus, Williamson is interested in making use of bounded rationality for the purpose of explaining the existence and boundaries of firms and therefore the choice between alternative governance structures rather than for the purposes of explaining ‘administrative behaviour’, as in Simon (1947). However, it is open to some debate whether it makes much sense to separate bounded rationality as an important ingredient in the understanding of governance structures from bounded rationality as the starting point for the understanding of decision processes, as different governance structures likely exhibit different decision process properties (March and Simon, 1958). Clearly, from an organisational theory point of view, the lack of concern with decision processes means that the important possibility that bounds on rationality may be endogenous to organisation is not inquired into (the exception being team theory; Marschak and Radner, 1972; Radner, 1996).

However, even the use of thin notions of BR is problematic from the point of view of a number of scholars, particularly those with a formalist bent (which means most modern research economists): As a minimum, contractual incompleteness must be endogenously derived in a well specified model (as in, e.g., Gifford, 1999) rather than being postulated through a loose appeal to bounded rationality. Such a position indicts most of the largely verbal transaction cost economics approach. More fundamentally, theorists have argued that BR, in contrast to Williamson (1985), is in fact not necessary to organisational economics. Thus, what BR primarily does in the theory – namely, rationalise contractual incompleteness and therefore the inefficient investment levels that are centre stage in much contract theory (Grossman and Hart, 1986; Hart, 1995) – can be done more elegantly by asymmetric information assumptions, particularly the assumption that investments in a relation are unverifiable by a third party (e.g., a judge) (for this argument, see Hart, 1990). This raises the issue of the future of work on BR in organisational economics.

Whither bounded rationality?

The role of BR in future organisational economics may be unchanged, diminished or increased. If 'unchanged' this means that organisational economics will continue to invoke BR as a catchy label for what makes contracts incomplete in the context of otherwise entirely mainstream models. For reasons given above, this is hardly a satisfactory scenario, because this use of BR is flagrantly *ad hoc*. However, notions of BR abound, and it is notoriously hard to formalise BR. This may lead to the persistence of the *ad hoc* strategy of making use of BR.

On the other hand, the *ad hoc* use of BR and the difficulty of formalising it in a general manner may lead theorists to abandon the concept. A further reason why theorists may abandon the concept is they feel it doesn't add anything. That this is the case has been forcefully argued by Maskin and Tirole (1999). They essentially argue that BR, specifically the inability to perfectly anticipate or describe all relevant contingencies, does not constrain the set of feasible contracts relative to the complete contracting benchmark. Of course, this implies that considerations of BR are essentially irrelevant to the understanding of inefficient investment patterns. Maskin and Tirole zoom in on the assumption in incomplete contracts theory that although valuations are not verifiable, they may be still be observable by the parties, implying that trade may be conditioned on message games between the parties. These games are designed *ex ante* in such a way that they can effectively describe *ex post* all the trades that were not described *ex ante*. Maskin and Tirole provide sufficient conditions under which the indescribability of contingencies does not restrict the payoffs that can be achieved. Space does not allow us to go into the subtle details of their argument, nor into the responses (e.g., Hart and Moore, 1999). Suffice it to be mentioned that the Maskin and Tirole point is developed in the context of a specific modelling approach and that it does not indict the use of BR in organisational economics in general.

The current general enthusiasm in economics for psychology may in fact lead to a stronger incorporation of BR in organisational economics models. A research strategy for this may proceed along these lines: a) consider the massive body of largely psychology-based research science on biases to human cognition and judgment (summarised for economists by Conlisk 1996; Camerer 1998; Rabin 1998); b) identify the regularities in how human decision-making systematically differs from the Savage model; c) treat these deviations as sources of transaction costs; and d) examine the implications for comparative contracting and the choice of governance structures (cf. Williamson, 1998, p. 18). Such a program may be seen as primarily an invitation to explore mechanisms, that is, causal connections that may or may not be triggered in specific situations, rather than for searching for general regularities.

To be more concrete, it is a call for exploring how a *specific* manifestation of BR – such as, say, reference level biases (Hart, 2007) – translate into transaction costs confronted by agents in a specific setting, and how this influences the contract or governance structure chosen by these agents to regulate their trade. Thus, we can imagine manifestations of BR such as context-dependent risk-preferences and weakness of will-problems complicating agency models, the endowment effect complicating models that make use of assumptions of transferable utility, the self-serving bias throwing light on *ex post* haggling costs, etc.

While this would seem to be a feasible research strategy, it is open to debate whether it is also a desirable one. The fear is that the field may end up with a mass of extremely partial models of strongly limited applicability. The optimist may counter that insights of rather general applicability may follow, because of the generality of many of the manifestations of BR. For example, Babcock and Loewenstein (1998) argue that self-serving biases are likely to be a very frequent determinant of a specific type of transaction costs, namely bargaining impasse. Moreover, new insights may be produced and old puzzles may be resolved. For example, in many work situations, precise signals on output are available, yet monitoring still takes place. Office workers may thus be supervised although it is trivial to count the number of forms they have processed at the end of the day. It seems unrealistic to argue that some random and unobservable factor should intervene in the work process, shifting too much risk on to the agent (Postrel and Rumelt, 1991). A more realistic explanation is lack of self-discipline in the performance of a boring job (Rabin, 1998)

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