

MODELLING RATIONAL AGENTS: FROM INTERWAR ECONOMICS TO EARLY MODERN GAME THEORY

Nicola Giocoli

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The fame of Nicola Giocoli's book precedes it – it has already gained awards from ESHET, and from the HES in an earlier manifestation as his PhD thesis, and comes with high praise from leading figures in the history and philosophy of economics. It therefore suffers the misfortune of having to live up to high expectations. It does not disappoint.

Giocoli starts by noting that we can distinguish the *body of knowledge* of a discipline from its *image of knowledge*, and that there is a dialectic between the two. The *image of knowledge* concerns what the discipline thinks it is and should be, how it presents and justifies itself to itself and to the world. The thesis is that over, very roughly, the century from the 1890s to the 1980s, a transformation took place in the *image of knowledge* of neoclassical economics, accompanied by corresponding changes in its *body of knowledge*. The *image* change that Giocoli identifies is from a 'system of forces' (SOF) to a 'system of relations' (SOR) view of what economics is about. According to the SOF view the focus of analysis is the economic processes generated by market and non-market forces, including, but not limited to, those leading towards equilibrium. The SOR image, in contrast, focuses on studying the properties and implications of the logically possible existence of an equilibrium, ignoring the processes that might be required to generate and underpin the equilibrium. This

change in focus, he argues, is accompanied by a change in the discipline's understanding of rationality, from one that stresses optimising behaviour, to a more rarefied notion of logical consistency.

The book consist of two parts, articulated by an 'interlude', and each consisting of two chapters, plus an introduction and conclusion. The introduction sets out the thesis just described, and then outlines mathematical formalism from Hilbert to Bourbaki, and the logical positivism of the Vienna Circle. These constitute the 'humus' in which two trends germinate – a trend within economics from Fisher, Pareto and Slutsky to Hicks, Allen and Samuelson, via Hayek, the Swedish school and Hutchison, and a mathematical trend exemplified by von Neumann and Morgenstern, and John Nash.

The first part of the book discusses neoclassical attempts to escape from psychology (chapter 2) and perfect foresight (chapter 3). These refer to the projects of freeing economic agents of any dependency on 'mental variables' and psychological processes, and, respectively, of relaxing the classical requirement of perfect knowledge on the part of agents for the achievement of an intertemporal equilibrium of the system as a whole. Giocoli argues that the two projects were inconsistent and led to a stalemate lasting from the late 1930s until well after World War II, which was resolved only by the replacement of the SOF by the SOR approach as the dominant self-image of economics.

The second part of the book discusses von Neumann and Morgenstern's (chapter 4), and then Nash's (chapter 5), versions of game theory. The puzzle that Giocoli

addresses is the failure of neoclassical economics to adopt game theory and in particular the concept of Nash equilibrium in the post-war period. Indeed, given the present-day consensus that Nash equilibrium embodies the discipline's most fundamental idea, how come it was almost completely ignored by the discipline for more than a third of a century, from 1950 until the mid-1980s? The answer that Giocoli gives is that game theory and Nash equilibrium were ideas whose time had not yet come. Only once the transformation of the dominant self-image of economics from SOF to SOR had been completed, and the consistency approach to rationality displaced the older, instrumental view, based on the maximisation of a utility function, was neoclassical economics ready to hear what the game theorists were saying.

In a sub-plot to this account, Giocoli examines the writings of von Neumann, Morgenstern and Nash to see where they stood on the SOF-SOR issue – and finds an ambivalence with some strong evidence of a preference for the SOF version. This leads to the intriguing counterfactual speculation as to what might have happened had their contributions been sold vigorously to the profession as such. Neoclassical economics might, he suggests, have found an alternative resolution to the crisis of the SOF view which did not lead to a victory of SOR.

I think this fascinating and provocative work can productively be linked to Mary Poovey's *History of the Modern Fact*. Poovey (1998) is an 'epistemological history' of political economy, a history of the ways political economists have sought to persuade, themselves and others, that what they are producing is reliable knowledge. Various phases of political economy are characterised, according to Poovey, by the

metaphors and tropes, the rhetorical strategies which form not only the language in which economics is communicated, but also the self-image of the discipline and hence the practice of economics itself. Without mentioning Poovey, this is precisely Giocoli's approach. SOF and SOR may both be understood rhetorically, as strategies to persuade us that economics is worth doing and the pronouncements of its practitioners worthy of attention. Both suffer from the perennial problem of the social sciences, the need to underpin the claim to the status of science, and both do so by reference to, and a claim to share the prestige of, a non-social science – in the case of SOF this is classical mechanics with its associated differential calculus, for SOR mathematical formalism, combinatorics and set theory. To set this out explicitly raises some interesting questions for further research. It is clear from Giocoli's account that the SOF paradigm did not founder because it was eclipsed by SOR: on the contrary, although SOF was in trouble from the end of the 1930s, as the attempted escapes from psychology and perfect foresight produced opposing results – one leading away from, and the other towards, including agent learning – it was not until the 1980s that SOR was established as the core of the neoclassical standpoint, allowing the rediscovery of game theory and Nash equilibrium. So what drove this process? Why did it become untenable for economists to present themselves as following an SOF image, and why did they feel they *had* to switch to the SOR programme? To have set the scene for asking these questions, however, is itself a towering achievement.

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References

Mary Poovey (1998) *A History of the Modern Fact. Problems of Knowledge in the Sciences of Wealth and Society* Chicago and London: The University of Chicago Press.

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