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From dual processes to multiple selves: Implications for economic behavior

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ABSTRACT

This article presents a short review of dual-process and dual-system theories from social and cognitive psychology and comments on their relevance for research on economic behavior. We view dual-process theories as a theoretical scaffolding which helps structure and interpret experimental results and can deliver important insights on human behavior in economic contexts. Dual-process ideas and concepts have already started to percolate into economics, contributing to the behavioral turn and the incorporation of bounded rationality into economic theory. The most recent development in this direction is represented by multiple selves models, which we view as a promising first step. We conclude the article with a brief discussion of the remaining articles in the special issue.

"The only way in which the economist can keep his studies from duplicating the psychologist's work is by taking his psychology from those who have specialized in that field. [...] The economist may attempt to ignore psychology, but it is a sheer impossibility for him to ignore human nature, for his science is a science of human behavior."
"Economics and Modern Psychology, Part 1", J. M. Clark, Journal of Political Economy 1918.

1. Introduction

In spite of popular beliefs, mainstream economics has long accepted that human decision makers are not faultless optimizers with unbounded capabilities. The study of bounded rationality (going back at least to Simon, 1959; see also Alchian, 1950) has been at the core of many modern developments, as e.g. the rise of evolutionary game theory (see Weibull, 1995) or the study of behavioural rules in learning models (consider e.g. the literature started by Kandori, Mailath, & Rob, 1993, and Young, 1993). Insights from psychology have systematically filtered over the years and there have been repeated calls for a

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greater integration of both disciplines (e.g. Camerer, 1999; Earl, 1990; Elster, 1998; Morgan, 1978; Rabin, 1998), going back as far back as the initial quote of this article, written at the end of World War I (Clark, 1918). Indeed, for many decades natural research trends have brought (micro) economics and (cognitive and social) psychology closer together. This development has been picking up pace in the recent years, as epitomized both by current trends in economic psychology and by the rapid growth of behavioural economics and behavioural game theory (see e.g. Camerer, 2003). Behavioural economics is indeed ripe with attempts to incorporate insights from psychology into the economics mainstream, ranging from the topics explored experimentally to the assumptions of formal models.

If we might be so bold, however, there is a lingering sense in the literature that behavioural economics remains a part of economics, developed by and for economists, while economic psychology remains a part of psychology, developed by and for psychologists. In our view, large parts of both economics and psychology may be understood as subdisciplines of a broader "decision science". If our disciplines are to contribute to a better understanding of actual human decision making, it becomes crucially important that theoretical developments (and not only experimental paradigms) arising in both disciplines are critically examined and integrated into a common research agenda.

One such theoretical development in psychology is represented by *dual-process theories* of human behaviour. These theories have become a useful tool to describe the mechanisms underlying behaviour and decision-making in a number of domains (for detailed overviews, see Evans, 2008; Weber & Johnson, 2009; Strack et al., in press-a). The fundamental assumption shared by all these theories is that human behaviour is the result of the interplay of two broad types of decision processes, which, in a nutshell, capture the difference between reasoned/reflective thinking and impulsive/reactive decisions. It seems to us that the economics profession, taken as a whole, has been thinking along similar lines for a long time, with the fully optimizing agents proper of neoclassical economics modelling an extreme version of one kind of processes, and the impulse-response behavioural rules proper of e.g. evolutionary game theory being closer to the other kind. In contrast to most formal models in economics, which frequently concentrate on one or the other extreme, the view from psychology is that such processes codetermine behaviour at the intra-individual level. This interaction between multiple processes is, in our opinion, the main insight that economic theory needs to internalize at this point.

The remainder of the article is structured as follows. In Section 2 we present an overview of dual-process models and their extrapolation, dual-system theories. The first formal attempt to incorporate such models and theories into economic theory is represented by multiple-selves models, which we will briefly discuss within the broader context and which are reviewed elsewhere in this issue. In Sections 3 and 4, we summarize two contributions to dual-process modelling from our own work. First, we discuss the Reflective–Impulsive Model (RIM; Strack & Deutsch, 2004) as a fully-fledged framework for dual-system thinking. Second, we briefly review a specific, formalized model of response-time determination based on dual-process assumptions (Achtziger and Alós-Ferrer, in press). In Section 5, we discuss the articles in this issue in the light of dual-process models. Section 6 concludes.

2. Theoretical principles

2.1. Dual-process models

When making decisions, human agents are frequently influenced by several judgmental processes. Some of them might deserve the adjective "rational", if their prescriptions coincide with the behavioural pattern derived from a benchmark model of rationality as e.g. optimizing a pre-specified utility function after using all available information to build beliefs on any relevant uncertain events. Others might be low-level cognitive processes closer to the behavioural rules considered in the bounded rationality literature or the heuristics often studied in the literature on judgment and decision making. Dual-process models share the assumption that the processes influencing the human mind are of two broad kinds, which have been labelled differently by different authors.

The first type has been variously called "controlled" (Schneider & Shiffrin, 1977), "reflective" (Lieberman, 2003; Strack & Deutsch, 2004), or "rational" (Epstein, 1994). Processes of this type have been characterized as deliberative (partly) conscious, effortful, employing rule-based inferences, and are assumed to consume cognitive resources. For an economist, it is only natural to think of rational, slow, resource-consuming deliberations as those ascribed to the neoclassical homo oeconomicus.

The other type of decision processes has been called "automatic" (Schneider & Shiffrin, 1977), "impulsive" (Strack & Deutsch, 2004), "reflexive" (Lieberman, 2003), or "experiential" (Epstein, 1994). Processes in this category are described as fast, unconscious, effortless, and including reactions based on well-learned prior associations (automatized). Again, for an economist it is natural to think of boundedly rational rules of thumb, as those studied in evolutionary game theory or the theory of learning in games, and sometimes postulated in behavioural economics.

The theoretical underpinnings of the automatic-controlled or reflective–impulsive duality sketched above deliver a number of qualitative predictions on process characteristics and process interaction which have found a direct translation into experimental techniques in psychology, but have yet to be fully integrated into experimental economics. As far as the automaticity dimension is concerned, the first, obvious way to distinguish decision processes relies on the measurement of *response times*. One of the defining characteristics of automatic processes in the framework of dual-process theories is precisely that they are faster (see Kahneman, 2011); hence they should result in shorter response times.