

## Normative Rational Choice Theory: Past, Present, and Future\*

D. Wade Hands  
Department of Economics  
University of Puget Sound  
Tacoma, WA, 98416, USA  
[hands@pugetsound.edu](mailto:hands@pugetsound.edu)  
Version 2.5  
10,555 Words  
[Minor Revision March 2018]

\* Versions of this paper have been around since 2010 and a version was published in *Voprosy Ekonomiki*, 10, 2012. Earlier versions were presented at the Fourth Annual Conference on the History of Recent Economics (HISRECO), Cachan, France, 3-5 June 2010; The Twenty-Fourth Annual International Workshop on the History and Philosophy of Science, Israel, 13-15 December 2010; the Allied Social Science Association (ASSA) Meetings, Denver, CO, 6-9 January 2011; and The TINT Institute in the Academy of Finland Center of Excellence in the Philosophy of Social Science, June 2016. Helpful comments on earlier drafts were received from Nathan Berg, Beatrice Cherrier, Annie Cot, John Davis, Francesco Guala, Floris Heukelom, Kyu Sang Lee, Christina Marcuzzo, Carlo Zappia and a number of other individuals various places where the paper was presented. Errors and omissions are of course solely my responsibility.

*An elaborate theory of rational decision has been developed by economists and statisticians, and put to widespread use in theoretical and policy studies. This is a powerful, mathematically precise, and tractable theory. Although its adequacy as a description of actual behavior has been widely questioned, it stands as the dominant view of the conditions that a rational decision should satisfy: it is the dominant normative theory.*

(Robert Nozick, 1993, p. 41)

*Psychologists distinguish between two kinds of theories: normative and descriptive. To them, normative theories characterize rational choice: examples would include the axioms of expected utility theory and Baye's rule. Descriptive theories try to characterize actual choices.*

(Richard Thaler, 2000, p. 138)

*... psychological theories of intuitive thinking cannot match the elegance and precision of formal normative models of belief and choice, but this is just another way of saying that rational models are psychologically unrealistic.*

(Daniel Kahneman, 2003, p. 1449)

*Economic models describe the task that animals and humans face in any decision-making situation. They define how a problem should be solved. Real animals and real people deviate from these solutions; they perform suboptimally.*

(Paul Glimcher, 2003, p. 334)

## 0. Introduction

A specter is haunting microeconomics: the specter of normativity. Rational choice is the core theory of modern microeconomics and as such economists have traditionally considered it – in both its risky (expected utility) and risk-free (ordinal utility) instantiations – to be a positive scientific theory. In fact, for the majority of mainstream economists since the 1940s, rational choice was not only a positive-scientific theory, it was also a very powerful and successful scientific theory (at least when compared to the available alternatives from non-mainstream economics and/or the other social sciences). Although it was common to admit that real agents might not possess stable well-ordered preferences and/or to be able to complete the necessary computations in the way the theory asserts, such methodological foibles were considered relatively minor and did not undermine the economics profession's general support of rational choice theory. The consensus was that rational choice was a powerful theory that provided empirically supported and practically reliable predictions of, and explanations for, the behavior of economic agents: both individuals and more aggregate agents such as households, firms, and nations.

Of course while the majority of economists supported rational choice theory, there were also critics who strongly denied that it "provided empirically supported and practically reliable predictions of, and explanations for, the behavior of economic agents." Although such critics came from many different theoretical and methodological perspectives, the majority also considered rational choice theory to be a positive scientific theory; they just thought it was not a very good scientific theory. They argued either that rational choice theory did not accurately characterize (even approximately) the decision-making processes of real economic agents, or that it failed to accurately predict the observable behavior of such agents, or both; but for both the critics as well as the defenders within economics, rational choice theory was an attempt to provide a positive scientific theory of economic behavior.

This paper will argue that the economics profession has changed in this regard. Although the transformation is far from complete, the tendency during the last few years has been for economists to increasingly view rational choice theory (hereafter RCT) as a *normative* rather than a positive theory about the behavior of economic agents. The relevant normativity involves rationality, not morality – what one *ought to do in order to be rational*, not what one ought to do in order to be moral, good, etc. – but it is a normative interpretation and thus constitutes a radical departure from the way that RCT has traditionally been perceived among economists. It will be argued that this change initiated from within a community of critics – contemporary behavioral economics and associated work in experimental psychology – but it has increasingly spread to the wider community of economists. Although this interpretation of RCT is relatively new among economists, it has a long history in experimental psychology, decision theory, and various branches of philosophy. The paper discusses the history of the normative interpretation, the recent change within economics, and examines some of the possible causes and consequences of this development.

## 1. Rational Choice Theory

Before discussing the normative interpretation RCT, it is useful to clarify exactly how the term RCT will be used in this paper. It is perhaps best to begin with the concept of rationality involved in RCT: *instrumental rationality*. Although the proper characterization of "rationality" is a topic of much debate in Western intellectual life – Hume versus Kant, Dewey versus Russell, Marx versus Weber, or Geertz versus any microeconomics textbook – instrumental rationality (sometimes called practical rationality) has a relatively established definition. Instrumental rationality exclusively involves the relationship between means and ends/goals. The action is instrumentally rational if the agent uses the most appropriate means to achieve the given ends. As the philosopher Michael Friedman explains:

Instrumental rationality thus refers to our capacity to engage in effective means-ends deliberation or reasoning aimed at maximizing our chances of success in pursuing an already set end or goal. It takes the goal in question as given, and it then attempts to adjust itself to environmental circumstances in bringing this desired state of affairs into existence in the most efficient way possible. (Friedman, 2001, p. 541)

Three things to notice about instrumental rationality. First, the ends or goals are given. On this definition of rationality, engaging in rational action does not involve the search for meaning or value; the valuation scheme is given prior to, and is unchanged by, the behavior in question. In the most general case the goals are given by a choice function (Arrow 1959); in the standard RCT characterization of individual consumer behavior the goals are given by the agent's preferences and the associated ordinal utility function. Second, the content of the given ends is entirely open. One can have hideously evil, or totally altruistic, preferences and still act rationally given those preferences. Finally, instrumental rationality need not involve optimization – although it often does. If the goals and the constraints can be specified in terms of sufficiently well-behaved mathematical functions, then instrumental rationality can often be reduced to a solving a particular mathematical optimization problem.

Although instrumental rationality does not restrict the content of the agent's ends – preferences in most economic models – it does in fact restrict the *structure* of those ends/preferences. The goals must be sufficiently well-ordered that an efficient solution (an instrumentally rational action) exists. Rational choice requires using the most efficient means for achieving given ends and as such it puts certain restrictions – structural, not content – on the underlying preferences. For example in demand theory, the agent is assumed to have well-ordered preferences (and the associated ordinal utility function) which includes properties like completeness, transitivity, and monotonicity. Thus rationality enters into RCT explanations in two separate (or at least separable) ways: 1) the goals must be rational in the sense that they must satisfy certain minimal structural conditions (such as transitivity) and 2) the agent must act in an instrumentally rational way to achieve these (rational) goals. Rational choice involves both having rational goals/preferences and choosing rationally given those goals/preferences.

Finally it should be noted that much of economics, even standard microeconomics, goes beyond RCT. The characterization of *individual economic agents* is in terms of RCT, but most of the things that economists want to explain – like market prices – are not the result of the actions of a single economic agent; they are the result of the *interactions* of a number of rational agents interacting

within the context of a specific institutional structure and subject to various social-level constraints. For example, the key economic concept of Adam Smith's invisible hand involves a social result – an increase in the wealth of nations, or the efficient allocation of scarce resources – that was not a goal of any individual agent. Economic explanations almost always involve RCT, but only in the first (individual action) part of the explanation; the heavy explanatory lifting is often done by the relevant institutions/rules for interaction of the individual agents and the particular solution (some version of an equilibrium) that is imposed on, or emerges from, that interaction. This said, the focus of this paper will be exclusively on RCT and the behavior of individual agents.

## 2. Economics, Philosophy, and the Normative Interpretation of Rational Choice

As noted above, economists (both defenders and critics) have traditionally viewed rational choice theory as a positive scientific theory: one that should describe, predict, and explain the behavior of individual economic agents. Economists have generally agreed that a separate part of the discipline should focus on *normative* issues – normative economics or welfare economics – but these normative issues are not the same as, and should be kept strictly separate from, positive scientific economics. Positive economics is concerned (exclusively) with *what is* objectively the case, while normative economics is concerned *what ought to be*, and RCT is (and should be) part of the former and not the latter.

In addition to separating RCT from normative theory, economists have traditionally equated the normative with the ethical: that which "should" be done on moral grounds. This identification of the normative with the ethical has taken a number of different forms in the methodological writings of various economists. For example, Neville Keynes in his much cited *Scope and Method of Political Economy* (Keynes 1917) first published in 1890, warned against mixing the normative and the positive: "the endeavor to merge questions of what ought to be with questions of what is tends to confuse, not only economic discussions themselves, but also discussions about economic method" (p. 63). But he defined "a *normative or regulative science*" as "a body of systematized knowledge related to criteria of what ought to be, and concerned therefore, with the ideal or distinguished from the actual" (pp. 24-25). This definition seems to offer some leeway about whether the normative is strictly moral. One could have ideals – for example ideals of rationality, or simplicity, or beauty – that are separate from the actual and yet completely unrelated to morality. Although Keynes's definition of the normative left the door open for normative "oughts" unrelated to ethics, all of his examples of normative economics involved decisions, usually decisions by the government, to bring about the "greatest aggregate happiness" (p. 62). It seems that for Keynes, writing in the context of late 19<sup>th</sup> century Cambridge, it was impossible to conceive of any normative standard that might

be used to evaluate or guide collective economic decision-making other than a Utilitarian – and thus ethical – one.

The most influential documents on the positive-normative dichotomy written by economists during the twentieth century – Lionel Robbins's *An Essay on the Nature & Significance* (1935) and Milton Friedman's "Methodology of Positive Economics" (1953) – follow Keynes on both of these issues. Both argued for a strict separation between positive and normative economics, and both at least implicitly equated the normative and the ethical.<sup>1</sup> As Friedman put it in a 1955 paper on utility theory: "Science is science and ethics is ethics; it takes both to make a whole man; but only confusion, misunderstanding and discord can come from not keeping them separate and distinct, from trying to impose the absolutes of ethics on the relatives of science" (p. 405). By the second half of the twentieth century this characterization normative economics – both parts: the "normative is, and should be, strictly separated from the scientific" and the "normative = ethical" – were widely accepted within mainstream economics and had become canonized in the introductory chapter of nearly every English-language textbook.<sup>2</sup>

But of course outside of economics, "normative" does not necessarily equal "ethical." Norms involve rules and action-guiding principles; they are prescriptive, but not all prescriptions prescribe that which is ethical. When someone is told they "ought to get more exercise," their actual behavior is being compared to a norm or ideal, but it is not an ethical norm; it is a norm about healthy living. More relevant to economics, when an economic methodologist like Mark Blaug accuses economists of "playing tennis with the net down" (Blaug, 1992, p. 241) because they do not subject their economic theories to severe empirical tests, Blaug is accusing economists of violating a norm, but it is a methodological or epistemological norm, not an ethical norm.

One way to interpret RCT is as a *normative theory of rationality*: a theory that describes what one *ought to do in order to be rational*. The relevant notion of rationality is quite specific – rational goals plus acting in an instrumentally way given those goals – but the theory tells us what ought to be done in order to behave consistently with this notion of rationality. On this interpretation RCT is

---

<sup>1</sup> While the vast majority of economists have traditionally equated normative and ethical, there were always exceptions, even early in the twentieth century. One reviewer of the first edition of Robbins's *Essay* criticized him on precisely these grounds: "... since 'normative' and 'ethical' are thus not identical, it would appear that we may have a 'normative' economics, which, at first sight at least, is quite distinct from 'ethics'" (Souter, 1933, p.402). Wesley C. Mitchell discussing Friedrich von Wieser's social economics in 1915 noted: "... even more than most members of his school, Wieser deals not with economic activity as it is, but with economic activity as it logically ought to be. His work is not positive, but a normative theory" (Mitchell, 1950, p. 250).

<sup>2</sup> See Hands (2012) for more discussion of the history of the normative-positive dichotomy in economics.

a normative, but not an ethically normative, theory. As Daniel Hausman and Michael McPherson explain:

Utility theory lays down formal conditions that choices and preferences ought to satisfy ... To define what rational preference and choice are is ipso facto to say how one ought rationally to prefer and choose. (2006, p. 49)

The theory of rationality is a normative theory, although *not* by itself a moral theory. One's preferences can be as rational in the pursuit of evil as in the pursuit of good. If one fails to choose what one prefers, then one is foolish, not necessarily morally culpable. As a normative theory, the theory of rationality says how people *should* behave, not what people actually do. Behavior that conflicts with the theory may thus show only that people fail to act rationally, rather than revealing any mistake in the theory. (2008, p. 236)

This conception of RCT, as normative theory of rationality, is how RCT has traditionally been interpreted by philosophers of social science (philosophers of decision theory in particular). As Don Ross explains:

Generalizing very broadly, for philosophers rational choice theory is a branch of normative inquiry, part of the answer to the questions about what an ideally rational agent *ought* to do. For economists, by comparison, rational choice theory is often viewed as contributing to *descriptive science*, offering analysis of what economic agents *in fact* do ... (Ross, 2005, p. 91)

One of many philosophers associated with this interpretation of RCT is Donald Davidson (2001, 2004). For example in response to Carl Hempel's attempt to build RCT theory into the standard Deductive-Nomological definition of scientific explanation (Hempel 1962), Davidson argues:

There remains this oddity in Hempel's proposal; the "laws," so called, of decision theory (or any other theory of rationality) are not empirical generalizations about all agents. What they do is define what is meant (or what someone means) by being rational. (Davidson, 2004, p. 110)

For Davidson, such theories have "a strong normative element" an "element that is essential if the concepts of preference, belief, reason, and intentional action are to have application" (ibid., p. 153). Notice with Davidson, as is often the case in the philosophical literature, the normative interpretation is intertwined with a

critique of RCT as a positive scientific theory. But also note that while an attention to RCT's empirical deficiencies is often correlated with an emphasis on the normative interpretation, methodological criticisms do not alone imply that RCT is, or should be, viewed as a normative theory of rationality.<sup>3</sup> In any case, this normative interpretation of RCT is quite different from the positive/descriptive interpretation that has traditionally been standard within the economics profession.<sup>4</sup> Since the normative interpretation does not necessarily exclude the possibility of RCT also being a useful theory of actual behavior (although for some authors it does), the point is that the normative interpretation is quite different from the traditional view of RCT as *exclusively* positive and normative as *exclusively* ethical.

Not only do most philosophers of decision theory regard RCT as a normative theory of rationality, they also generally recognize microeconomics as a particular instantiation of RCT, thus making it normative as well. Although philosophers tend to focus on von Neumann-Morgenstern expected utility theory, they also recognize that the normative interpretation applies to economic theories where probabilities do not appear in the agent's choice/objective function. A telling example is the following table from Patrick Suppes's 1961 paper on "The Philosophical Relevance of Decision Theory" (p. 606):

	Individual Decisions	Group Decisions
Normative Theory	Classical Economics Statistical Decision Theory Moral Philosophy	Game Theory Welfare Economics Political Theory
Descriptive Theory	Experimental Decision Studies Learning Theory Survey Studies of Voting Behavior	Social Psychology Political Science

<sup>3</sup> Alexander Rosenberg (1992, 1995) is a good example of a philosopher who is quite critical of RCT as a positive scientific theory, but does not take the position that RCT is a normative theory of rationality.

<sup>4</sup> To be fair, some modern economists have interpreted RCT (or recognized that RCT might be interpreted) as a normative theory of rationality – Maurice Allais (1979), Daniel Ellsberg (1961) and Jacob Marschak (1950, 1951) for example – but they often differed on the character of the relevant norm (as well as the relationship to positive theory) and they were always in the minority. It is also useful to note that Allais, Ellsberg, Marschak, and other economists willing to consider a normative interpretation were exclusively concerned with von Neumann-Morgenstern *expected utility theory* and not, for example, risk-free instantiations of RCT such as consumer choice theory (this issue will be examined in more detail below).



Notice where Suppes placed economic theory in the table. It is right there in the northwest corner as a normative theory of individual decision-making (along with statistical decision theory and moral philosophy).<sup>5</sup>

One particularly illuminating example of how economists have interpreted RCT exclusively as a positive scientific theory while philosophers and decision theorists have interpreted it as a normative theory of rationality is the influential research on von Neumann-Morgenstern expected utility theory (hereafter EUT) conducted by the economist Milton Friedman and the philosopher/ decision theorist Leonard Savage during the 1950s. When Savage was writing alone, as in Savage (1954, 1972), RCT was considered a normative theory, and when Friedman was writing alone, as in Friedman (1955), RCT was considered strictly positive. However, in their co-authored work – Friedman and Savage (1948, 1952) – they presented RCT as a positive theory – actually there was one footnote in the 1952 paper (p. 463) that mentioned the possibility of a normative interpretation – but this only highlights the difference between the way that economists and philosophers have traditionally interpreted RCT, since the co-authored papers were published in *The Journal of Political Economy*. As Francesco Guala explains:

Savage, who had in articles written with Friedman (1948, 1952) put the theory to descriptive use, focused in later papers on its normative properties. In ... *Foundations of Statistics* (1954), subjective EU axioms are presented and defended as describing the behaviour of an ideal rational agent facing risk ... Savage (1952) presented his subjective EU theory explicitly as a normative theory of behaviour from the start. He acknowledged that *sometimes* people's behaviour should agree with the theory, ... but his emphasis was very different from that of the Friedman and Savage articles. (Guala, 2000, p. 68)<sup>6</sup>

---

<sup>5</sup> Note that while many philosophers did (and do) interpret RCT and the associated economic theories as normative theories of rationality, that is certainly not the case for all philosophers who have written about the subject. Many – particularly those who were/are primarily philosophers of natural science – have, over the years, tried to demonstrate that RCT lives up to, or can be made to live up to, the methodological standards of the best natural science. Much of this work – for example Hempel (1962) and Popper (1994) – focused on demonstrating how RCT explanations are consistent with the Deductive-Nomological model of scientific explanation. There have of course been many critics among philosophers – Davidson (2001, 2004) and Rosenberg (1992, 1995) as noted above – but it is important to recognize (also as noted above) that rejecting the scientific standing of RCT does not necessarily lead to the conclusion that it is a normative theory of rationality. In fact, as will be seen in section 4 of this paper, accepting the scientific status of RCT is not only not sufficient for accepting the adequacy of the normative interpretation, it may not even be necessary.

<sup>6</sup> The Savage (1952) paper mentioned in this quote was published in French in CNRS (1953) *Économétrie*. Also see Blume and Easley (2008), Heukelom (2014), and/or Starmer (2009) on the differences between Savage and Friedman-Savage on EUT. Sugden (1991) provides a discussion of many of the philosophical issues raised by Savage's approach.

### 3. Experimental Psychology, Experimental Economics, Behavioral Economics, RCT, and Recent Trends

The normative interpretation of RCT is also common in experimental psychology and the subfields within economics that have been directly influenced by experimental psychology: experimental economics, behavioral economics, and neuroeconomics.<sup>7</sup> Although there exists a long and rich history of behavioral economics, behaviorist economics, and research in experimental psychology that overlapped with economic theory, extending back well beyond the recent literature that began with Daniel Kahneman and Amos Tversky's paper on prospect theory in 1979, for the purposes here it is sufficient to focus on this more recent research.<sup>8</sup>

From the very beginning the economics literature associated with experimental psychology – now often referred to as the heuristics-and-biases approach – emphasized contrasting the actual-descriptive behavior of individuals – primarily subjects in laboratories, but also in the field (in "the wild") – with the behavior implied by normative RCT. As Kahneman and Tversky explained on the first page of *Choices, Values, and Frames*:

The study of decisions addresses both normative and descriptive questions. The normative analysis is concerned with the nature of rationality and the logic of decision making. The descriptive analysis, in contrast, is concerned with people's beliefs and preferences as they are, not as they should be. The tension between normative and descriptive considerations characterizes much of the study of judgment and choice, (Kahneman and Tversky, 2000, p. 1)

And similarly as Kahneman explained in the discussion of prospect theory in his Nobel lecture:

One novelty of prospect theory was that it was explicitly presented as a formal descriptive theory of the choices that people actually make, not as a normative model. This was a departure from a long history of choice models that served double duty as normative logics and as idealized descriptive models. (2003, p. 1456)

---

<sup>7</sup> I will use the term "experimental psychology" in what follows, but that label is actually too broad. Experimental psychology is very diverse, including radical behaviorism, psychophysics, and a number of other research programs that did not (at least directly) influence these recent developments in economics. The experimental psychology that is relevant here is the Behavioral Decision Research (BDR) program associated with Ward Edwards, Daniel Kahneman, Amos Tversky, and others. See Davis (2011) and Heukelom (2011, 2014) for a detailed discussion of the BDR research program in experimental psychology and its historical and methodological relationship to behavioral economics.

<sup>8</sup> For a variety of views on the more extensive history see Bruni and Sugden (2007), Camerer and Loewenstein (2004), Earl (2005), Hands (2010), Heukelom (2014), Rabin (1998), and Sent (2004).

The difference between normative and descriptive theory – and the insistence that RCT was a normative theory that economists had mistakenly tried to use for descriptive purposes – was also a key feature of the literature in experimental and behavioral economics directly influenced by Kahneman, Tversky, and other experimental psychologists. As Richard Thaler explained in his influential paper on the endowment effect:

Economists rarely draw the distinction between normative models of consumer choice and descriptive or positive models. Although the theory is normatively based (it describes what rational consumers should do) economists argue that it also serves well as a descriptive theory (it predicts what consumers in fact do). This paper argues that exclusive reliance on the normative theory leads economists to make systematic, predictable errors in describing and forecasting consumer choices. (1980, p. 39)

Notice that while the normative characterization of RCT among behavioral economists conflicts with the economic conventional wisdom regarding both RCT's positive status and the identification of the normative with the ethical, these economists generally continue to support the strict separation of the normative from the positive handed down from Neville Keynes, Robbins, and Friedman. As Kahneman and Tversky put it at the end of one of their papers on framing: "the main theme of this article has been that the normative and descriptive analysis of choice should be viewed as separate enterprises" (1986, p. S275). For most experimental psychology-inspired behavioral economists RCT is normative (but not ethically normative), but they continue to defend the profession's traditional strict dichotomy by arguing that this (now normative) theory should be kept strictly separate from the experimental and behavioral inquiries that provide the basis for descriptive theorizing in the positive economic science.<sup>9</sup>

As is now well-known the Kahneman and Tversky research program in experimental psychology and the extensive literature in experimental economics and behavioral economics that has developed over the last few decades has produced a vast array of empirical results in conflict with RCT. A list of the

---

<sup>9</sup> Although this summary is fine for our purposes here, the issue is not quite this black and white. In particular, the views of Kahneman, Tversky, and other influential contributors to the field have evolved over time. See Heukelom (2011, 2014) and Lee (2011) a more in-detailed examination of Kahneman and Tversky's views on the normative character of RCT and related issues. It should also be noted that the fast-and-frugal heuristics program of Gerd Gigerenzer and his associates (e.g. Gigerenzer 2008; Gigerenzer and Goldstein 1996; Gigerenzer, Hertwig, and Pachur 2011) differs from the heuristics-and-biases program of Kahneman, Tversky, and most behavioral economists on this matter. For those who support the fast-and-frugal program, one of the main criticisms of the heuristics-and-biases mainstream is their endorsement of RCT as the proper normative theory of rationality.

variety of empirical anomalies that have repeatedly and systematically been observed within the contemporary literature includes: reference-dependence, loss-aversion, social preferences, preference reversals, framing effects, endowment effects, hyperbolic discounting, sunk cost effects, anchoring, decision bracketing, mental accounting, context effects, the availability bias, and a variety of others.<sup>10</sup> Although some economists continue to downplay these results, many within experimental and behavioral economics take the position that "the deviations of actual behavior from the normative model are too widespread to be ignored, too systematic to be dismissed as random error, and too fundamental to be accommodated by relaxing the normative system" (Kahneman and Tversky, 1986, p. S252). Given the key role that RCT plays in all of modern economics, these anomalies have had a rather disquieting effect on economics in general. As Daniel McFadden explains (he uses the term Chicago-man for RCT):

The leading research paradigm has been the focus of Amos Tversky and Danny Kahneman on experimental study of *cognitive anomalies*: circumstances in which individuals exhibit surprising departures from rationality. This work has both fascinated and dismayed economists: it has been like watching master carpenters construct the scaffold for your hanging. The studies show that individuals faced with decision-making tasks in carefully constructed experimental settings often exhibit behavior that is inconsistent with the Chicago-man model ... (McFadden, 1999, p. 79)

Whether the change in attitude is because the anomalies literature has been persuasive or for other reasons – some possibilities are discussed in the next section – it seems that the habit of thinking about RCT in normative terms is no longer restricted to those economists who self-identify with the heuristics-and-biases research program. In fact, surprisingly, the normative interpretation seems to have spread to economists who tend to defend RCT as a descriptive theory and are often at odds with psychological approaches (at least the part about the anomalies being "too fundamental to be accommodated by relaxing the normative system").

For example, the Nobel prize-winning experimental economist Vernon Smith, whose research program is generally quite different from – and in many ways opposed to – the heuristics-and-biases tradition, often discusses RCT as a normative theory. Rather than either naively defending traditional theory, or emphasizing the conflict between the descriptive evidence and RCT, Smith suggests a third view:

---

<sup>10</sup> See any survey of contemporary experimental and/or behavioral economics for a discussion of these anomalies and the evidence surrounding them (e.g. Bardsley et al. 2009, Camerer and Loewenstein 2004, DellaVigna 2009, Kahneman and Tversky 1986 or 2000, Rabin 1998).

... that of experimental economics, which documents a growing body of evidence that is consistent with the implications of rational models, although there are many important exceptions. In the latter, often the data can be comprehended by modifying the original models. The results is to deepen the concept of rationality and simultaneously increase consistency between the observations and the models; better normative models more accurately predict the experimental results. Psychologists almost uniformly report results contrary to rational theory, which leads them to conclude that the "normative and descriptive analyses of choice should be viewed as separate enterprises." (Smith, 1991, p. 878)

Notice that even though that Smith is defending RCT against the criticisms of Kahneman, Tversky and others, he takes it as given that pure RCT is a normative theory. This is a substantive change for the economic conventional wisdom and it is even more significant since it comes from an experimental economist who is outside, and often critical of, psychological approaches. It seems that even experimental economists who want to reform/revise (rather than abandon) RCT in light of the various experimental anomalies are now comfortable thinking about RCT as a normative theory of rational behavior (perhaps a normative theory that could be improved, but normative nonetheless). Regardless of how one evaluates this move, it represents a serious change.

Similar changes can be found elsewhere within contemporary economics among those who come into regular contact with, but often do not support the psychological approach. One such area is neuroeconomics, the field that applies the tools of modern neuroscience to economic behavior. Many of those working in neuroeconomics also view (pure) RCT as a normative theory: a theory about how agents – including nonhuman agents – should act in the context of constrained choice. Like experimental economists such as Smith, they simultaneously 1) recognize the problems of pure RCT as a descriptive theory, 2) recognize RCT as a normative theory of what rational agents should do, 3) but seek a new middle-way that reconciles or unifies the purely descriptive evidence and the prescriptive ideal of RCT. A good example is given by the remarks from the neuroeconomic researchers Paul Glimcher, Michael Dorris and Hannah Bayer:

The history of economics has been marked by an iterative tension between prescriptive and descriptive. Prescriptive theories seek to define efficient or optimal decision making which descriptive advances then invariably suggest do not accurately describe human behavior. The neoclassical revolution, and the period that followed it, were no exception to this general paradigm. (2005, pp. 213-14)

... neuroeconomics seeks to unify the prescriptive and descriptive approaches by relating evolutionary efficiencies to underlying mechanisms. Neoclassical economics and utility theory on which it is based provide the ultimate set of tools for describing these efficient solutions; and evolutionary theory defines the field within which mechanism is optimized by neoclassical constraints; and neurobiology provides the tools for elucidating those mechanisms. (2005, p. 253)

It is useful at this point to stop and compare the various positions that have been discussed in this section. The traditional view of economists has been that the normative and the positive should be kept strictly separate, the normative was associated with ethics, and RCT was exclusively a positive theory (the majority considered it to be successful, but even the critics viewed it as an attempt to predict and explain economic behavior). The experimental and behaviorist economists of the Kahneman-Tversky tradition have generally taken the position that RCT is a normative theory of rationality and that as such it should be kept strictly separate from the kind of psychologically-informed theorizing necessary for a successful positive science of economic behavior. Experimental economists such as Smith and many neuroeconomists also view pure RCT as a prescriptive theory of rationality, but also argue that it provides a useful baseline (although one that might be improved), and that efforts should be made to reconcile the normative ideal of RCT with the best available experimental evidence. The more psychologically-oriented among contemporary theorists seem to hold on to the strict dichotomy between normative and positive, while experimental economists and neuroeconomists more sympathetic to RCT seek to bridge the gap between, or unify, these two different aspects of economic theorizing. But both groups now seem to accept that RCT, at least in its purest textbook form, is a normative theory of ideally rational behavior, and no one seems to identify the normative with the moral.

Thus far the discussion has focused on economists whose work is in some sense related to the psychological tradition: experimental economists, behavioral economists, neuroeconomists and such. But there is also evidence that the normative interpretation of rational choice is no longer limited to economists working in these fields. Although it is very difficult to measure, there is some evidence the normative interpretation is spreading to the profession more widely. For example, in the "rationality" entry in the 2008 edition of *The New Palgrave Dictionary of Economics* – a volume aimed at the broad professional audience – one finds:

One source of confusion in evaluating claims for and against the economist's psychology is that the theory has both positive and

normative components. According to Marschak (1950, p. 111), "The theory of rational behavior is a set of propositions that can be regarded either as idealized approximations to the actual behavior of men or as recommendations to be followed." Savage's early work with Milton Friedman (1948; 1952) was explicitly descriptive, but Savage (1956) is just as explicitly normative. It is not surprising that a description of decision in terms of beliefs and desires should have a normative component which evaluates how well goals are achieved. (Blume and Easley, 2008, p. 887)

Of course this is not an endorsement of the normativity of RCT, but it does recognize there are serious arguments in favor of such an interpretation, and perhaps even more importantly, the traditional identification of the normative with the ethical is completely absent. This is of course just one example, and it would be very difficult to document a general trend in this direction, but given that young economists in all fields are now routinely exposed to the ideas of experimental and behavioral economics, and given that the concentration of experimentally-oriented economists continues to increase within the general population of economists, it would hardly be surprising to find this interpretation of RCT becoming more common.

In summary, it is clear that the language of normative RCT has become standard in the experimental-oriented areas within economics, and there is at least some evidence it is spreading more widely. For this reason I will refer to the *normative turn* in the remainder of the paper. The normative turn involves both accepting (or at least entertaining) the normative characterization of RCT – as a theory of what rational agents ought to do – and disconnecting the normative from the ethical. The normative turn is of course intertwined with broad recognition of various empirical anomalies that have proved to be quite problematic for positive RCT, but it does not require any commitment as to whether those anomalies will, or should, lead to the complete overthrow of the rational choice paradigm (or whether it can be modified in various ways to accommodate them), and it also does not require commitment on whether normative RCT could, or should, be improved. It is unquestionable that the normative turn has taken place in fields such as experimental and behavioral economics, and there is some evidence that it is spreading to the economics profession more broadly.

#### 4. The Normative Turn: Causes, Consequences, and Possibilities

This section will list four (A – D) of the many possible causes and consequences of the normative turn. This list is certainly not exhaustive of the possible questions that might be raised about this recent development.

##### A. A Defensive Methodological Move?

If one assumes the role of a philosopher of natural science – particularly a Popperian philosopher of science (Popper 1963) – it seems fairly easy to interpret the normative turn as a way of protecting RCT against empirical falsification. Among economists RCT was traditionally considered to be an empirically successful scientific theory, then came a host of anomalous empirical results showing that real people do not make choices in the way that RCT suggests, and presto, it suddenly becomes a normative theory (and as such a theory that could not possibly be expected to predict real behavior). This certainly looks fishy. Of course one should not expect a single negative "crucial experiment," or even a handful of such experiments, to overthrow a general theory in the human sciences such as RCT. But repeated, systematic, replicated, negative experiments, that emerged across a wide range of different subjects, types of subjects, experimenters, laboratories, and experimental protocols, over multiple decades, should lead to questioning the scientific credibility of the relevant theory – and redefining the theory as normative and thus immunizing it against such empirical criticism seems to be methodologically dubious (at best).

Although there is not much explicit criticism of the normative turn along these lines, the case has been made for Savage's adoption of a normative interpretation of EUT after the revelation of the Allais paradox in Paris in 1952: "After being exposed to the Allaisian test, Savage moved from a positive to a normative understanding of EUT" (Jallais, Pradier, and Teira, 2008, p. 54). As Guala explains:

Before the Paris conference, EU theory had been interpreted mainly as a descriptive theory of human behaviour. The Allis paradox provoked a major shift in the problem of decision making under risk, and many decision theorists began to defend the EU model from a normative point of view ... The "Neo-Bernoullians" of the "American school" – as Allais labeled the supporters of EU theory – slowly shifted to this terrain in order to save their favoured model: theories of rational behaviour has a normative status and, therefore, should not be modified in the light of 'irrational' choices. According to Allais, the shift from a descriptive to a normative interpretation deprived EU theory of its scientific content. (Guala, 2000, p. 67)<sup>11</sup>

Trying to sort out whether a similar kind of ad hoc move was involved in the recent normative turn is a difficult task. There are many reasons for a normative interpretation of RCT that have nothing to do with the theory's empirical track record – as demonstrated by the long philosophical literature on practical rationality unrelated to various recent anomalies – and given the number of different economists and the variety of different points of view, it is difficult to

---

<sup>11</sup> See similar remarks by Philippe Mongin (2009, p. 328).



see how anything so self-consciously defensive could be involved. It can also be argued that a similar move took place a long time ago in the theory of the firm. It is difficult to defend the model of the perfectly competitive firm as descriptively adequate for most sectors of the economy, and yet it continues to play an important role as a norm, a standard, by which the behavior of actual firms might be judged. Perhaps the normative move amounts to something like this for RCT more generally. At the very least it seems that the issue of whether the normative turn involves a methodologically dubious defensive strategy is something that deserves additional methodological research, and it is also something to keep in mind as the profession slowly comes to grips with the growing list of empirical anomalies and the (associated?) normative interpretation of RCT.

#### B. A Prerequisite for a Better Understanding of the Complex Relationship Between the Normative and the Positive RCT

Despite the fact that most economists endorsed – at least officially – the strict separation of normative and positive, there is an extensive philosophical literature arguing that the two are inexorably entangled.<sup>12</sup> One common argument is that even though "is" does not imply "ought," "ought" does imply "can"; that which one ought (or ought not) do, with respect to morality, rationality, or any other normative standard, needs to be something that is possible. In the words of Robert Nozick:

... though it is not necessary that a useful normative theory be satisfied by everyone, it seems necessary that it be a theory which can be satisfied by someone; that is, that it not be a theory which is such that in order to satisfy it a being would need to possess powers, capacities, abilities and skills far beyond those possessed by human beings as they now are. (1963, p. 24)

As Philippe Mongin explains, this was an important part of the critique of RCT associated with the work of Herbert Simon and the first generation of behavioral economists:

We finally mention the connection implied by *the cognitive preconditions of rational decision-making*. Since Simon's work on bounded rationality, it is a well taken point that in order to have any normative force, a rule of decision must make feasible demands on the individual's ability to collect information and make computations. This new linkage of the normative and the

---

<sup>12</sup> See for example Putnam (2002) and Searle (2001). Hands (2012) relates some of these philosophical concerns to debates in economics.

empirical is but a contextual way of making good the meta-ethical principle that "ought" implies "can." (2009, p. 349)

This simple insight has, over the years, motivated a number of investigations into the complex relationship between normative and positive RCT. Even if RCT is a normative theory about rationality, this still leaves open the question of whether it is possible for human agents to act in the way the theory says they should act. If it is not possible, then it reflects poorly on RCT as a normative theory (since that which we ought to do must be something we could possibly do). On the other hand, if it is possible, then the door is open for the normative theory to be descriptively useful as well. One such study was conducted by Donald Davidson, Patrick Suppes, and Sidney Siegel as part of the Stanford Value Theory Project during the 1950s. As they explained: "A normative theory of rational decision which is to be any practical use must, then, be capable of empirical application; and if it is capable of empirical application, it is possible that it is true on a descriptive level" (1957, p. 4). This was just one of many attempts to bring empirical evidence to bear on the question of the normative adequacy of RCT. Jallais, Pradier and Teira (2008) discuss three such episodes in the history of RCT. One example is the work of Jacob Marschak (1950, 1951). Marschak viewed RCT as normative, but also argued that following rational rules would make the agent successful in the long run – thus "reasoning in semantic circles from rationality conditions to examples, and vice-versa" (Mongin, 2009, p. 328) – which, much like the Davidson, Suppes, and Siegel study, provides a linkage between the empirical evidence about rational behavior and the normative appropriateness of RCT. Other research which examine these issues includes Guala (2000), Herfeld (2018), and Starmer (2005, 2009). Guala uses Lakatos's philosophy of mathematics (Lakatos 1976) to show the complex interaction of the normative and the descriptive in the history of EUT, in particular, how EUT "was formulated, empirically refuted, normatively defended, normatively falsified, and finally modified" (2000, p. 80). Herfeld provides a detailed history of various individuals – Jacob Marschak and Tjalling Koopmans in particular – who promoted the normative interpretation of RCT at Cowles during the period 1943-54; the result being that by "1954, the normative interpretation of rational choice theories at Cowles had become dominant." (2018, p. 42). While Starmer examines the corpus of Friedman and Savage's work on EUT and criticizes what he calls the "FS twist": using normative appeal "as a source of empirical support" (2009, p. 289).

Although a substantial amount of research currently exists – empirical and philosophical – on the variety of ways RCT as an empirical theory interacts with, and possibly lends credence to, RCT as a normative theory, there are certainly many more questions that could be examined. The main point here though, is not to advocate for any particular argument or approach, but rather to emphasize that a necessary presupposition for all of this work is the recognition that RCT is,

at least in some ways, a normative theory, and a normative theory about rationality not ethics. In other words, any such research on the relationship between normative and positive RCT presupposes the normative turn.

### C. Is This a Reason for Re-examining Welfare Economics?

The discussion in this section concerns an important part of the history of rational choice economics not discussed above. Thus far we have focused on RCT, a theory that economists have not traditionally recognized as normative; this section turns to a part of the discipline that economists have traditionally recognized as normative: *welfare economics*. Although not everything that is normative is ethical, there are still serious questions about the relationship between RCT – regardless of whether it is positive, (rationally) normative, or both – and *ethically normative* welfare economics.

Standard welfare economics – in any of its traditional forms: Pareto efficiency, the compensation principle, or cost-benefit analysis – is based on an individual preference satisfaction notion of the good (of welfare).<sup>13</sup> The traditional way that RCT intersects welfare economics is the (riskless) theory of consumer choice: the consumer is assumed to have well-ordered preferences (represented by an ordinal utility function) defined over non-negative bundles of commodities, and chooses the most preferred bundle (the utility maximizing bundle) from the affordable set. The content of the preferences are unrestricted, but they are assumed to be well-ordered (complete and transitive) and to have sufficient structure to guarantee that a unique utility-maximizing bundle will exist for any set of prices and income (any budget constraint). The satisfaction of individual preferences is the sole criterion by which individuals value various states of the world – various commodity bundles – and the well-being of the individual is based entirely on the degree to which their individual preferences are satisfied. Welfare economics takes this characterization of economic agents as given and adds a moral principle: a criterion for a *good* or *welfare-increasing* allocation of resources in a world composed of such agents. One such (morally) normative principle is minimal benevolence. As Hausman and McPherson explain:

Once well-being is identical with the satisfaction of preferences, the central features of standard normative economics follow naturally. All they need is one innocuous moral principle of *minimal benevolence*: other things being equal, it is a morally good thing if people are better off ... Those who accept minimal benevolence and identify an individual's welfare with the satisfaction of that

---

<sup>13</sup> It is useful to note that with the development of the capabilities-based and other more recent approaches to welfare economics, "standard" welfare economics is perhaps less standard today than it was a few decades ago. Perhaps a better term for the "standard" theory I am refereeing to would be "normative neoclassical economics" (Berg, 2003, p. 415).

person's preferences will judge that, other things being equal, it is a morally good thing to satisfy an individual's preferences. The main issue in standard normative economics is according to what extent economics enable individuals to satisfy their preferences. (2006, p. 65)

In other words, standard welfare economics can be reduced to a combination of (generally riskless) RCT and a moral principle connecting individual preference satisfaction to that which is morally good.

Now of course there is an extensive literature that challenges standard welfare economics – from hedonistic Utilitarians, to various brands of Institutionalists, to Amartya Sen, and many others – but one thing that has always weighed heavily into the debate on the side of the mainstream theory is how closely the welfare criterion is tied (it was argued) to the best available scientific theory of individual behavior: RCT. But here of course is the problem with the normative turn. If RCT is a normative theory of rationality, and one that frequently fails to predict or explain the behavior of real agents, then it seriously undercuts this well-worn defense of standard welfare economics. The standard defense is that we should be willing to live with a relatively thin concept of economic welfare, and the corresponding weak policy tools (such as Pareto efficiency), in exchange for a theory of welfare economics that hooks up tightly with the best available scientific theory of human behavior, i.e. RCT. But if RCT is no longer considered to be the exemplary scientific theory of individual behavior, and is rather itself a normative theory of "rational" action (and one based on a relatively thin notion of rationality), why should we settle for the associated welfare economics? Perhaps we need to rethink welfare economics, either by making it consistent with a more descriptively accurate theory of individual behavior, or by turning to concepts of welfare that are not based on individual preference satisfaction.<sup>14</sup> In any case, the normative turn seems to have serious implications for standard welfare economics.

#### D. There May Also Implications for Behavioral Economics-based Welfare Economics

The normative turn not only poses a challenge for standard welfare economics, it also poses a potential challenge for some of the policy proposals recently offered by behavioral economists – the new welfare economics of libertarian paternalism, asymmetric paternalism, and nudging (Camerer, Issacharoff, Loewenstein, O'Donoghue, and Rabin 2003, Sunstein and Thaler 2003a, 2003b, 2008).

---

<sup>14</sup> Hausman and McPherson (2006, 2008) offer some guidance on these issues, but there are many possibilities.

The new welfare economics<sup>15</sup> is a framework for thinking about microeconomic policy based on the results of recent behavioral economics and the various empirical anomalies facing RCT theory. It is thus a policy extension of the normative turn. The basic argument is that since the heuristics and biases literature reveals that people do not act rationally – they do not really do what is best for them; they make *mistakes* – it is the proper goal of various *choice architects* in the public and private sector to "nudge" them in the direction of that which is in their own best interest, but they would not do on their own. Paternalism of course "arose from skepticism about the ability of certain categories of people to make decisions in their best interest" (Camerer, Issacharoff, Loewenstein, O'Donoghue, and Rabin, 2003, p. 1210), but paternalism in general is costly: both in terms of economic costs and individual freedom. The idea of the new welfare economics is to design policies that will involve relatively small interventions that would have high benefits to those who would, without the regulation, make relatively large mistakes (are least rational), while imposing little or no cost on those who would make few mistakes (are most rational). Libertarian paternalism offers "nudges that are most likely to help and least likely to inflict harm" (Sunstein and Thaler, 2008, p. 72), while asymmetric paternalism "aims to help boundedly rational people avoid making costly mistakes, while at the same time causing little or no harm to rational people" (Camerer, Issacharoff, Loewenstein, O'Donoghue, and Rabin, 2003, p. 1250), but the two approaches are clearly "in the same spirit" (Sunstein and Thaler, 2008, p. 72, note). As Sunstein and Thaler explain in their popular 2008 book on nudging:

If you look at economics textbooks, you will learn that homo economicus can think like Albert Einstein, store as much memory as IBM's Big Blue, and exercise the willpower of Mahatma Gandhi ... But the folks that we know are not like that. Real people have trouble with long division if they don't have a calculator, sometimes forget their spouse's birthday, and have a hangover on New Year's Day. They are not homo economicus; they are homo sapiens. To keep our Latin usage to a minimum we will hereafter refer to these imaginary and real species as Econs and Humans. (pp. 6-7)

In accordance with our definition, a nudge is any factor that significantly alters the behavior of Humans, even though it would be ignored by Econs. Econs respond primarily to incentives. If the government taxes candy, they will buy less candy, but they are not influenced by such "irrelevant" factors as the order in which options are displayed. Humans respond to incentives too, but they

---

<sup>15</sup> Or perhaps it should be called the new new welfare economics since what is now traditional welfare economics was in fact called the new welfare economics (in contrast to hedonistic utilitarianism) during the 1940s and 1950s.

are also influenced by nudges. By properly deploying both incentives and nudges, we can improve our ability to improve people's lives, and help solve many of society's major problems. And we can do so while still insisting on everyone's freedom to choose. (p. 8)

Although the new welfare economics is obviously indebted to the normative turn and the literature on various anomalies of RCT, it also seems to be undercut by other aspects of the turn. The problem is that what people are being nudged into is rationality *as defined by rational choice theory*. In Sunstein and Thaler's language of Econs and Humans, nudges involve changes that "would be ignored by Econs," but after the nudge what Humans will be doing is exactly what Econs would do (Davis, 2011, p. 62). Nudge-based policies thus seem to be quite traditional: nudging people into making various Pareto improvements, in particular, making it easier for them to exploit potential gains from trade between their Human-selves and their Econ-selves. Under the circumstances, it seems puzzling that "the recent ascent of leading behavioralists into the limelight has not been accompanied by a new normative framework, for analyzing policy" (Berg, 2003, p. 412).

It is a great irony that most voices in behavioral economics, purveyors of a self-described opening up of economic analysis to psychology, hang on the idea of the singular and universal supremacy of rational choice axioms as the proper normative benchmarks against which virtually all forms of behavior are to be measured. (Berg and Gigerenzer, 2010, p. 148)<sup>16</sup>

"But although behavioral paternalists have rejected the neoclassical notion of rationality as a positive description of behavior, they have - perhaps surprisingly - retained it as a normative standard. When they advocate policies designed to improve or correct behavior, what they mean is encouraging behavior that conforms more closely to the neoclassical ideal that they believe is factually false." (Whitman and Rizzo, 2015, p. 412)

It seems that the problem here is quite similar to the problem with traditional welfare economics discussed above. Once it is clear that rationality only means having well-ordered preferences and acting optimally on those preferences (in particular, it does not restrict the content of preferences in any way), and once the evidence piles up that such behavior is rather uncommon among humans, then questions can be raised about whether normative standards grounded in

---

<sup>16</sup> It should again be noted that not all heuristics-based choice theories accept the standard RCT-based view of normative rationality. The fast-and-frugal heuristics program of Gigerenzer and others defend a non-traditional, ecological rationality-based, view of normative rationality (see note 9 for references).

such notions of rationality continue to be appropriate for welfare economics and microeconomics-based policy. The argument in libertarian and asymmetric paternalism is to nudge people into acting in the way that people would act if RCT were descriptively accurate: but according to the behavioral economists promoting the new welfare economics, it isn't. It is a normative theory of rationality based on one particular, and in many ways quite thin, concept of rationality, and this raises serious questions about whether any version of RCT-based welfare economics is appropriate for public policy. There are of course no easy answers here; the point is simply to begin the conversation on such questions, and that requires recognition of the normative turn.<sup>17</sup>

## 5. Conclusion

The purpose of this paper has been to explain the normative turn in recent experimental and behavioral economics, to suggest that it is beginning to be accepted more widely among economists, and to raise some questions about the causes and consequences of this change. Section two discussed the various arguments that philosophers have offered for the normativity of RCT – a theory of what one ought to do in order to be rational – and used the Friedman-Savage work on EUT during the 1950s as an example of the differences between the way that economists and philosophers have viewed RCT. Section two also made the case that economists have traditionally equated the normative exclusively with the ethically normative. Section three examined the results of the experimental and behavioral economics literature of the last few decades with a particular emphasis on the influence of experimental psychology. The many empirical anomalies of RCT were discussed and it was argued that the recently emerging heuristics-and-biases tradition in economics – like many philosophers, but unlike most economists (at least traditionally) – tend to view RCT as a normative theory of rationality. The case was also made in section three that economists seem to be changing their view of RCT in the direction of philosophers and those in the psychological tradition; this may be the case for economists more generally, but it is clearly the case for experimental and behavioral economists, even those who are not necessarily sympathetic to ideas from experimental psychology. The tendency for economists to view RCT as a normative theory of rationality and to separate the normative from the ethical was called the normative turn. The last section examined four of the many possible questions/concerns raised by the

---

<sup>17</sup> It should be noted that nudging-based approaches are just one part – although the part that gets the most attention in public policy and the popular press – of the recent literature on *behavioral welfare economics*. Another approach is the effort by Kahneman and others to revive Bentham's hedonistic utilitarianism by grounding welfare on experienced, as opposed to decision, utility (Kahneman and Thaler 2006, Kahneman, Wakker and Sarin 1997). See Chetty 2015 for suggestions on how to blend this approach with more traditional rational choice and welfare economics. There is also a part of the behavioral welfare economics literature that is grounded in a revealed preference theory (Bernheim and Rangel 2009, Bernheim 2016) and some has been linked directly to developments in neuroeconomics (Bernheim 2009, Fehr and Rangel 2011).

normative turn. The introduction of these four topics was intended to raise questions and further discussion on these various issues, not to defend a particular position regarding either the causes or the consequences of the normative turn. There seems to be little doubt about the presence of the normative interpretation of RCT within experimentally-based areas of economics and if the change is becoming more widespread, as it was suggested here, the impact will be quite significant. It is too early to tell what all this might eventually mean, but this paper has been an attempt to make the reader aware of the change and to draw attention to some of the possible consequences.



## References

- Allais, Maurice (1979), "The Foundations of a Positive Theory of Choice Involving Risk and a Criticism of the Postulates and Axioms of the American School," in *Expected Utility Hypothesis and the Allais Paradox*, Dordrecht, NL: D. Reidel, 27-145.
- Arrow, Kenneth J. (1959), "Rational Choice Functions and Orderings," *Economica*, 26, 121-27.
- Bardsley, Nicholas; Cubitt, Robin; Loomes, Graham; Moffatt, Peter; Starmer, Chris; and Sugden, Robert (2009), *Experimental Economics: Rethinking the Rules*. Princeton, NJ: Princeton University Press.
- Berg, Nathan (2003), "Normative Behavioral Economics," *Journal of Socio-Economics*, 32, 411-27.
- Berg, Nathan and Gigerenzer, Gerd (2009), "As-If Behavioral Economics: Neoclassical Economics in Disguise?" *History of Economic Ideas*, 18, 133-66.
- Bernheim, Douglas (2009), "On the Potential of Neuroeconomics: A Critical (but Hopeful) Appraisal," *American Economic Journal: Microeconomics*, 1, 1-41.
- Bernheim, B. Douglas (2016), "The Good, the Bad, and the Ugly: A Unified Approach to Behavioral Welfare Economics," *Benefit Cost Analysis*, 7, 12-68.
- Bernheim, B. Douglas and Rangel, Antonio (2009), "Beyond Revealed Preference: Choice-Theoretic Foundations for Behavioral Welfare Economics," *Quarterly Journal of Economics*, 124, 51-104.
- Blaug, Mark (1992), *The Methodology of Economics: Or How Economists Explain*. 2<sup>nd</sup> ed., Cambridge: Cambridge University Press.
- Blume, Lawrence E. and Easley, David (2008), "Rationality," in *The New Palgrave Dictionary of Economics*. 2<sup>nd</sup> Edition, New York: Palgrave Macmillan, 884-93.
- Bruni, Luigino and Sugden, Robert (2007), "The Road Not Taken: How Psychology was Removed from Economics, and How It Might be Brought Back In," *The Economic Journal*, 117, 146-73.
- Camerer, Colin; Issacharoff, Samuel; Loewenstein; O'Donoghue, Ted; and Rabin, Matthew (2003), "Regulation for Conservatives: Behavioral Economics and the

Case for 'Asymmetric Paternalism'," *University of Pennsylvania Law Review*, 151, 1211-54.

Camerer, Colin and Loewenstein, George (2004), "Behavioral Economics: Past, Present, and Future," in *Advances in Behavioral Economics*, Princeton: Princeton University Press, 3-51.

Chetty, Raj (2015), "Behavioral Economics as Public Policy: A Pragmatic Perspective." *American Economic Review*, 105, 1-33.

Davidson, Donald (2001), *Essays on Actions and Events*. 2nd Edition, Oxford: Clarendon Press. [1st Edition 1980].

Davidson, Donald (2004), *Problems of Rationality*. Oxford: Clarendon Press.

Davidson, Donald; Suppes, Patrick; and Siegel, Sidney (1957), *Decision Making: An Experimental Approach*. Stanford, CA: Stanford University Press.

Davis, John B. (2011), *Individuals and Identity in Economics*. Cambridge: Cambridge University Press.

DellaVigna, Stefano (2009), "Psychology and Economics: Evidence From the Field," *Journal of Economic Literature*, 47, 315-72.

Earl, Peter E. (2005), "Economics and Psychology in the Twenty-First Century," *Cambridge Journal of Economics*, 29, 909-27.

Ellsberg, Daniel (1961), "Risk, Ambiguity, and the Savage Axioms," *Econometrica*, 75, 643-65.

Fehr, Ernst and Rangel, Antonio (2011), "Neuroeconomic Foundations of Economic Choice – Recent Advances," *The Journal of Economic Perspectives*, 25, 3-30.

Friedman, Michael (2001), *Dynamics of Reason*. CSLI publications: Stanford, CA.

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

Friedman, Milton (1955), "What is Utility?" *The Economic Journal*, 65, 405-409.

Friedman, Milton and Savage, L. (1948), "The Utility Analysis of Choices Involving Risk," *Journal of Political Economy*, 56, 279-304.

Friedman, Milton and Savage, L. (1952), "The Expected-Utility Hypothesis and the Measurability of Utility," *Journal of Political Economy*, 60, 463-74.

Gigerenzer, Gerd (2008), *Rationality for Mortals: How People Cope With Uncertainty*. New York: Oxford University Press.

Gigerenzer, Gerd and Goldstein, Daniel G. (1996), "Reasoning the Fast and Frugal Way: Models of Bounded Rationality," *Psychological Review*, 103, 650-69.

Gigerenzer, Gerd; Hertwig, Ralph; and Pachur, Thorsten (eds.), (2011), *Heuristics: The Foundations of Adaptive Behavior*. New York: Oxford University Press.

Glimcher, Paul W. (2003), *Decisions, Uncertainty, and the Brain: The Science of Neuroeconomics*. Cambridge, MA: MIT Press.

Glimcher, Paul W.; Dorris, Michael C.; and Bayer, Hanna M. (2005), "Physiological Utility Theory and the Neuroeconomics of Choice," *Games and Economic Behavior*, 52, 213-56.

Guala, Francesco (2000), "The Logic of Normative Falsification: Rationality and Experiments in Decision Theory," *The Journal of Economic Methodology*, 7, 59-93.

Hands, D. Wade (2010), "Economics, Psychology, and the History of Consumer Choice Theory," *Cambridge Journal of Economics*, 34, 633-48.

Hands, D. Wade (2012), "The Positive-Normative Dichotomy and Economics," in *Philosophy of Economics*, U. Mäki (ed.), Vol. 13 of D. Gabbay, P. Thagard and J. Woods (eds.), *Handbook of the Philosophy of Science*. Amsterdam: Elsevier, 219-39.

Hausman, Daniel M. and McPherson, Michael (2006), *Economic Analysis, Moral Philosophy and Public Policy*. Cambridge: Cambridge University Press.

Hausman, Daniel M. and McPherson, Michael (2008), "The Philosophical Foundations of Normative Economics," in *The Philosophy of Economics: An Anthology*, 3<sup>rd</sup> edition, Cambridge: Cambridge University Press, 226-50.

Hempel, Carl G. (1962), "Rational Action," *Proceedings and Addresses of the American Philosophical Association*, 35, 5-23.

Herfeld, Catherine (2018), "From Theories of Human Behavior to Rules of Rational Choice: Tracing a Normative Turn at the Cowles Commission, 1943-54," *History of Political Economy*, 50, 1-48.

Heukelom, Floris (2011), "Behavioral Economics," in *The Elgar Companion to Recent Economic Methodology*, J. B. Davis and D. W. Hands (eds.), Cheltenham: Edward Elgar Publishing, 19-38.

Heukelom, Floris (2014), *Behavioral Economics: A History*. Cambridge: Cambridge University Press.

Hicks, John R. (1946), *Value and Capital*, 2<sup>nd</sup> Edition, Oxford: Clarendon Press [first edition 1939].

Jallais, Sophie; Pradier, Pierre-Charles; and Teira, David (2008), "Facts, Norms, and Expected Utility Functions," *History of the Human Sciences*, 21, 45-62.

Kahneman, Daniel (2003), "Maps of Bounded Rationality: A Perspective on Intuitive Judgment," *American Economic Review*, 93, 1449--1475.

Kahneman, Daniel and Thaler, Richard H. (2006), "Utility Maximization and Experienced Utility," *Journal of Economic Perspectives*, 20, 221-34.

Kahneman, Daniel and Tversky, Amos (1979), "Prospect Theory: An Analysis of Decisions Under Risk," *Econometrica*, 47, 263-91.

Kahneman, Daniel and Tversky, Amos (1986), "Rational Choice and the Framing of Decisions," *The Journal of Business*, 59, S251-S278.

Kahneman, Daniel and Tversky, Amos (eds.) (2000), *Choices, Values, and Frames*. Cambridge: Cambridge University Press.

Kahneman, Daniel; Wakker, Peter B. and Sarin, Rakesh (1997), "Back to Bentham?" *The Quarterly Journal of Economics*, 112, 374-405.

Keynes, John Neville (1917), *The Scope and Method of Political Economy*. 4<sup>th</sup> edition, London: Macmillan [1<sup>st</sup> edition 1890, Augustus M. Kelley reprint 1986].

Lakatos, Imre (1976), *Proofs and Refutations*, J. Worrall and E. Zahar (eds.), Cambridge: Cambridge University Press.

Lee, Kyu Sang (2011), "Three Ways of Linking Laboratory Endeavors to the Realm of Policies," *European Journal of the History of Economic Thought*, 18, 755-76.

Marschak, Jacob (1950), "Rational Behavior, Uncertain Prospects, and Measurable Utility," *Econometrica*, 18, 111-41.

Marschak, Jacob (1951), "Why 'Should' Statisticians and Businessmen Maximize 'Moral Expectation'?" *Proceedings of the Second Berkeley Symposium on Mathematical Statistics and Probability*. Berkeley, CA.

McFadden, Daniel (1999), "Rationality for Economists?" *Journal of Risk and Uncertainty*, 19, 73-105.

Mele, Alfred and Rawling, Piers (eds.) (2004), *The Oxford Handbook of Rationality*. Oxford: Oxford University Press.

Mitchell, Wesley C. (1950), "Wieser's Theory of Social Economics," in *The Backward Art of Spending Money*, New York: Augustus M. Kelley, 225-57 [originally published in 1915].

Mongin, Philippe (2009), "Duhemian Themes in Expected Utility Theory," in *French Studies in the Philosophy of Science*, A. Brenner and J. Gayon (eds.), New York: Springer, 303-57.

Nozick, Robert (1963), *The Normative Theory of Individual Choice*. New York: Garland Publishing [1963 Princeton PhD thesis published in 1990].

Nozick, Robert (1993), *The Nature of Rationality*. Princeton: Princeton University Press.

Popper, Karl R. (1963), *Conjectures and Refutations*, New York: Harper & Row.

Popper, Karl R. (1994), "Models, Instruments, and Truth: The Status of the Rationality Principle, in *The Myth of the Framework: In Defense of Science and Rationality*, London: Routledge, 154-84.

Putnam, Hilary (2002), *The Collapse of the Fact/Value Dichotomy and Other Essays*. Cambridge, MA: Harvard University Press.

Rabin, Matthew (1998), "Psychology and Economics," *Journal of Economic Literature*, 36, 11-46.

Robbins, Lionel (1935), *An Essay on the Nature and Significance of Economic Science*, 2<sup>nd</sup> edition, London: Macmillan and Co. [first edition 1932].

Rosenberg, Alexander (1992), *Economics – Mathematical Politics or Science of Diminishing Returns?* Chicago: University of Chicago Press.

Rosenberg, Alexander (1995), *Philosophy of Social Science*, 2<sup>nd</sup> edition, Boulder, CO: Westview Press.

- Ross, Don (2005), *Economic Theory and Cognitive Science*. Cambridge, MA: MIT Press.
- Savage, Leonard J. (1954), *The Foundations of Statistics*. New York: Wiley.
- Savage, Leonard J. (1972), *The Foundations of Statistics*, 2<sup>nd</sup> edition, New York: Dover.
- Searle, John R. (2001), *Rationality in Action*. Cambridge, MA: MIT Press.
- Sent, Esther-Mirjam (2004), "Behavioral Economics: How Psychology Made Its (Limited) Way Back Into Economics," *History of Political Economy*, 36, 735-60.
- Smith, Vernon L. (1991), "Rational Choice: The Contrast Between Economics and Psychology," *Journal of Political Economy*, 99, 877-97.
- Souter, R. W. (1933), "The Nature and Significance of Economic Science: in Recent Discussions," *The Quarterly Journal of Economics*, 47, 377-413.
- Starmer, Chris (2005), "Normative Notions in Descriptive Dialogues," *The Journal of Economic Methodology*, 12, 277-89.
- Starmer, Chris (2009), "Expected Utility and Friedman's Risky Methodology," in *The Methodology of Positive Economics: Reflections on the Milton Friedman Legacy*, Uskali Mäki (ed.), Cambridge: Cambridge University Press, 285-302.
- Sugden, Robert (1991), "Rational Choice: A Survey of Contributions From Economics and Philosophy," *The Economic Journal*, 101, 751-85.
- Sunstein, Cass R. and Thaler, Richard H. (2003a), "Libertarian Paternalism Is Not an Oxymoron," *University of Chicago Law Review*, 70, 1159-1202.
- Sunstein, Cass R. and Thaler, Richard H. (2003b), "Libertarian Paternalism," *American Review*, 93, 175-79.
- Sunstein, Cass R. and Thaler, Richard H. (2008), *Nudge: Improving Decisions About Health, Wealth, and Happiness*. New Haven, CT: Yale University Press.
- Suppes, Patrick (1961), "The Philosophical Relevance of Decision Theory," *The Journal of Philosophy*, 58, 605-614.
- Thaler, Richard H. (1980), "Toward a Positive Theory of Consumer Choice," *Journal of Economic Behavior and Organization*, 1, 39-60.

Thaler, Richard H. (2000), "From Homo Economicus to Homo Sapiens," *Journal of Economic Perspectives*, 14, 133-41.

Whitman, Douglas Glenn and Rizzo, Mario J. (2015), "The Problematic Welfare Standards of Behavioral Paternalism," *Review of Philosophy and Psychology*, 6, 409-425.