

Economics, psychology and the history of consumer choice theory

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This paper examines elements of the complex place/role/influence of psychology in the history of consumer choice theory. The paper reviews, and then challenges, the standard narrative that psychology was ‘in’ consumer choice theory early in the neoclassical revolution, then strictly ‘out’ during the ordinal and revealed preference revolutions, now (possibly) back in with recent developments in experimental, behavioural and neuroeconomics. The paper uses the work of three particular economic theorists to challenge this standard narrative and then provides an alternative interpretation of the history of the relationship between psychology and consumer choice theory.

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1. Introduction

The paper examines the relationship between consumer choice theory¹ and psychology during the first half of the twentieth century. There seem to be two popular views on the matter within the contemporary literature:

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¹ The term ‘consumer choice theory’ will mean the contents of the consumer choice chapter in mainstream microeconomics textbooks; the consumer is assumed to have complete and transitive preferences (and thus could be represented by an ordinal utility function) and chooses the most preferred bundle from the affordable set defined by the standard linear budget constraint. Since the textbook version of consumer choice theory did not stabilise as ‘the’ theory of consumer choice until the late 1940s, the same term will be used to cover the wide range of utility maximisation-inspired theories of consumer decision-making that preceded this stabilisation: from early neoclassicals such as William Stanley Jevons and on into the so-called ordinal revolution of Vilfredo Pareto, John R. Hicks and R. D. G. Allen, Eugene Slutsky and others. This is certainly not to suggest that all of these various approaches were the same—they certainly were not—but only that they can be treated as members of the same family of theories for the present purposes. Notice that the paper focuses exclusively on the relationship between psychology and consumer choice theory (not all of economics).

- During the ordinal revolution psychology was driven out of consumer choice theory and that was a good thing.
- During the ordinal revolution psychology was driven out of consumer choice theory and that, we now realise, was a bad thing.¹

The first is often endorsed by those who are broadly supportive of rational choice theory and its particular instantiation in (what is now) standard consumer choice theory; the second is endorsed by contemporary experimental and behavioural economists who are (to some degree) critical of rational choice theory and the way that it has traditionally been applied to consumer behaviour.

Many recent commentators have argued that the relationship between the two fields is far more complex than can be captured by the simple question of whether it was (scientifically) a good thing or a bad thing (see, e.g., Davis, 2003; Earl, 2005; Giocoli, 2003; Sent, 2004). Even though I agree with this criticism, such arguments will not be the focus of this paper. Here I want to focus on the first part of these two statements, the part that almost everyone accepts: the claim that psychology was driven out of consumer choice theory during the ordinal revolution. I will argue that many psychological ideas and concepts played an important role in the consumer choice theories of those responsible for the ordinalist revolution—although certain psychological aspects were purged—and that understanding the type of psychology that was and was not considered acceptable during this period helps us better understand the ordinal revolution and how (the now standard) consumer choice theory stabilised in the way that it did.

2. The standard story: psychology in, out and now (perhaps) back in

In simplified form, the standard story of consumer choice theory is that psychology came into economics during the neoclassical revolution of the 1870s, and remained in for the period of cardinal utility theory, but then was driven out during the ordinal and revealed preference revolutions. Starting in the 1870s the history of consumer choice theory is often presented as a series of three progressive stages: the views of the early neoclassicals, the ordinal revolution in the 1930s, and finally the move to revealed preference/consistency starting with Samuelson (1938). If one extends this story forward to the current time, then it appears that yet another change—in this case a change back to the explicit consideration of psychology—may be underway. This section will provide a brief discussion of these stages.

The traditional characterisation of (particularly British) first generation neoclassical theory is that it was a marginal utility-based choice theory employing a *cardinal* and *hedonistic* notion of utility. Cardinal in the sense that differences in the valuation of various bundles of goods took on numerical values and hedonistic in the sense that levels of utility were associated with the amount of pleasurable (or painful) psychic feeling the consumer received from the bundle in question. This theory of behaviour was obviously linked to utilitarian ethics but, since the concern here is individual choice, it is not necessary to discuss welfare economics or social utility in any detail. That said, it is useful to note that early neoclassical theory is also identified with the ability to make *interpersonal utility comparisons*. If the goal is to maximise the sum (or average) of human pleasurable feelings,

¹ I will not provide references for the first view since the story is reviewed in the next section. A few of the many references for the second view include Bruni and Sugden (2007), Camerer and Loewenstein (2004), Kahneman (2003) and Rabin (1998, 2002, 2004).

then certainly it would be useful to be able to add up the feeling/utility levels of different agents.

Early neoclassicism, at least on this standard reading, was clearly psychological. It was a particular kind of psychology—psychological hedonism based on introspection—but it was clearly psychology and it was an essential part of the theory. During the last decade of the nineteenth century and the first few decades of the twentieth, this psychological hedonism became the main point of attack for critics of marginal utility theory. As Lionel Robbins put it (in his colourful style): ‘The borderlands of Economics are the happy hunting ground of minds averse to the effort of exact thought, and, in these ambiguous regions, in recent years, endless time has been devoted to attacks on the alleged psychological assumptions of Economic Science’ (1952, p. 83). For a variety of reasons, including the rise of experimental psychology and the influence of positivist ideas about science, psychological hedonism quickly lost intellectual credibility and, given the relationship between early neoclassicism and hedonistic psychology, it became necessary for marginalist economics to reform its theoretical foundations.¹

At first the modern theory of value seemed almost a branch of psychology ... For since the solution of all problems related to the measurableness of psychic phenomena is quite uncertain, a wide field remains subject to controversy. Even aside from the differences of opinion among the followers of the hedonistic school, the very bases of the edifice constructed by this school have been shaken by violent attacks ... From this it follows that, if we wish to place economic science upon a solid basis, we must make it completely independent of psychological assumptions ... (Slutsky, 1915, p. 27)

As this Slutsky quote suggests, the most common criticism of hedonistic psychology was that it was based entirely on the internal subjective feelings of the individuals in question and such psychic phenomena were not objectively observable. Although the introspective method of ‘inner observation’ was generally considered to be an acceptable method of ‘observation’ during the nineteenth century, by the early twentieth century this was no longer the case. This change in what was considered to be an acceptable empirical ‘observation’ undermined introspection’s epistemic warrant and, thus, by implication, marginalist economic theory. The economics profession’s desire to separate from its earlier psychological roots initiated the ‘escape from psychology’, which ultimately precipitated out in the ordinalist (and revealed preference) revolutions. This has been called the ‘empiricist motive’ (Giocoli, 2003, p. 43) for the escape from psychology, and, in a sense, that is entirely correct—feelings and the associated mental states were not empirically observable and thus a properly scientific economics would need to find alternative, more adequate, foundations—but in a sense it was less an ‘empiricist’ move, than a change in the notion of what counted as ‘empirical’. It was not that the relevant intellectual community suddenly became ‘empiricist’—John Stuart Mill (1874) was both a staunch empiricist and also a defender of introspection in economics—but rather that introspective, inner, observations no longer counted as ‘scientific’ observations.

The standard argument is that the *ordinal revolution* provided the solution to this dilemma. According to ordinal utility theory, consumers were still assumed to maximise a utility function but the function only expressed an ordinal—better or worse—not a cardinal valuation of various commodity bundles. Consumers had preferences and those

¹ During the last few years there has been an attempt to revive hedonism in economics. The revival takes many forms, but Daniel Kahneman’s ‘experienced utility’ (Kahneman and Thaler, 2006; Kahneman *et al.*, 1997) and the ‘happiness’ literature (see Frey and Stutzer, 2002, for instance) have been the most influential.

preferences could be represented by indifference curves, but a particular indifference curve was not associated with any specific level of cardinal utility. Since cardinal utility was associated with hedonistic psychology of pleasures and pains, the move to ordinal utility theory was also viewed as a rejection of such hedonism. Again, Robbins minced no words on the matter:

Recognition of the ordinal nature of the valuations implied in price is fundamental. It is difficult to overstress its importance. With one slash of Occam's razor, it extrudes for ever from economic analysis the last vestiges of psychological hedonism. (Robbins, 1952, p. 56, n. 2)

Thus, according to the traditional interpretation, the ordinal revolution simultaneously freed consumer choice theory from the difficulties of psychological hedonism and placed it on more objective scientific foundations. The bottom line is that psychology was exclusively identified with hedonistic psychology and as such it had to be (and was) eliminated from consumer choice theory.

It is argued that the final step in the escape from psychology was completed by Samuelson's attempt to reconstruct consumer choice theory along completely behaviourist lines: what came to be called the theory of 'revealed preference'. Samuelson started from the position that the ordinal revolution had not gone far enough: 'despite the fact that the notion of utility has been repudiated or ignored by modern theory, it is clear that much of even the most modern analysis shows vestigial traces of the utility concept' (Samuelson, 1938, p. 61). For Samuelson, in 1938, even though ordinal utility theory was a step in the right direction, it was still a *utility* theory, and needed to be replaced by a theory of consumer behaviour grounded completely on operational and observational concepts. Samuelson's original revealed preference theory was an attempt to forge a purely behaviourist theory of consumer choice and as such represented 'the culmination of the neoclassical economists' 45-year-long escape from psychology' (Giocoli, 2003, p. 99).

Ordinal utility theory and revealed preference theory continue to be 'the' theory of consumer choice in contemporary economics, but the story of its relationship to psychology does not end there. Although textbook consumer choice theory is essentially the same as it has been for over 50 years, there seems to be a growing movement within economics to pay greater attention to psychology, and perhaps even modify choice theory to better account for the results of recent psychological research. Daniel Kahneman, an experimental psychologist, receiving the Nobel Prize in Economics in 2002, as well as the profession's willingness to listen to the criticisms of, and entertain the various theoretical alternatives offered by, Kahneman and his associates (Kahneman and Tversky, 2000) are clear indications of this trend, but the recent psychological turn goes well beyond the influence of any one particular group of psychologists. Extensive surveys of the literature on 'psychology and economics' now appear regularly in mainstream economic journals (Rabin, 1998, 2002); the field of 'behavioural economics' has taken off during the last decade to establish itself as an important new framework for understanding economic behaviour in a wide range of specific contexts (Camerer and Loewenstein, 2004; Gilad *et al.*, 1984; Rabin, 2004); experimental economics has firmly established itself as an important new field and maintains close linkages to experimental psychology (Guala, 2005; Hertwig *et al.*, 2001; Sugden *et al.*, 2005); and, finally, the field of neuroeconomics has appeared on the scene and quickly captured the attention of the economics profession (Camerer *et al.*, 2005; Glimcher, 2003; Ross, 2005). All in all it seems like the mental life of agents—and thus

psychology—is back into mainstream economic theory. As the editors of a special issue on economics and psychology recently explained:

With regard to fear and loathing . . . it is good to see that those days are now behind us. A common language is emerging and more collaboration and cross-fertilization are budding. In fact, for some people it is hard to determine whether they are actually a psychologist or an economist; their affiliation more and more become the only cue. Even though, it may be a bit premature to substitute ‘fear and loathing’ with ‘trust and love’, the current mutual interest and respect seems a good foundation for a fruitful future. (Handgraaf and van Raaij, 2005, p. 391)

In evaluating the possible impact of these changes it is useful to remember that there were many rounds of criticisms against neoclassical choice theory during the twentieth century—the criticisms of institutionalist economists like Thorstein Veblen and Wesley Clair Mitchell early in the century (Coats, 1976) and the first generation of ‘behavioural’ economics, or ‘old’ behavioural economics (Sent, 2004),¹ associated with the work of Herbert Simon and James March (March, 1978; Simon, 1955, 1956) to name just two—and although the mainstream responded more positively to the latter than the former, there was not a substantial change in the core consumer choice theory in either case. The current revival of interest in psychology may have similar consequences but, that said, there are substantial differences between the current situation and those of earlier periods. Let me just mention three.

First, there seems to be a general willingness among mainstream economists to accept certain systematic stylised facts (or anomalies) from the literature on experimental psychology—the endowment effect, framing, loss aversion, anchoring, preference reversals, mental accounting, etc.—*as facts*; that is, to accept them as things that need to be explained. Of course, for many economists such anomalies do not require any substantive change in economic theory, but even those who are primarily concerned with explaining away such anomalies by creative application of rational choice theory still consider the relevant psychological facts to be facts worthy of attention. Second, the presence of experimental economics as a well-established field of economic research—with PhDs, articles in respected economic journals and academic job openings for specialists—accommodates a rapprochement with mainstream economists that did not exist in earlier periods. It is not a coincidence that Kahneman’s 2002 Nobel Prize was shared with Vernon Smith. It is important to note that the availability and acceptability of experimental evidence is a substantive change in economics; the core writings in economic methodology from Mill (1874), to Robbins (1952), to Milton Friedman (1953), all started from the ‘fact’ that controlled experiments were not generally available in economics. Now they are. The third difference is that we now have *instruments* that can monitor mental activity in a way that was not previously available. Edgeworth longed for a ‘hedonimeter’ to measure human psychic responses (Edgeworth, 1881, p. 101; Colander, 2007), but the magnetic resonance images and other neural imaging devices employed in neuroeconomics now promise to actually deliver such observations. Again, this does not necessarily imply the rejection of traditional rational choice theory, but it does mean that mental states have been given a new (epistemic) lease on life, which suggests that psychology, the science of mental states, may again be important to economic theorising.

This ends the introductory discussion of the role of psychology in consumer choice theory. The standard story is that, starting from the neoclassical revolution, psychology

¹ Sent (2004, pp. 740–2) divides ‘old’ behavioural economics into four separate schools of thought. These and other critical research programmes are also discussed in Earl (1990) and Gilad *et al.* (1984).

was in until the ordinal and revealed preference revolutions—where it was driven out—but it may have been coming back in for the last few decades as a result of developments in experimental psychology, behavioural economics, experimental economics, neuroeconomics and related research. It is now time to muddy the water around this traditional narrative.

3. Looking closer at the relationship between psychology and consumer choice theory during the ordinal revolution

The goal of this section will be to challenge this standard narrative about the relationship between psychology and consumer choice theory by providing a few examples which demonstrate that some version of psychology was present in the consumer choice theory of many of the key figures in the ordinal revolution. I only provide three examples here (Slutsky, Robbins and Samuelson), but additional examples can be found in some of the literature discussed below. I begin with Eugene Slutsky.

Slutsky has traditionally been characterised as the paradigmatic ordinalist—the first person to articulate a constrained optimisation-based theory of consumer choice that was completely devoid of cardinal utility and hedonistic psychology. As the Slutsky quote in the previous section makes clear, his famous paper began with the claim that ‘if we wish to place economic science upon a solid basis, we must make it completely independent of psychological assumptions’ (Slutsky, 1915, p. 27), and as any microeconomics textbook will attest, the paper’s mathematical analysis remains at the heart of contemporary consumer choice theory. The problem is that when one looks closely at Slutsky’s original paper, and/or the arguments in his later papers on economics (Slutsky, 1926, 1927), the picture of Slutsky as an ordinalist, anti-hedonist and psychological eliminativist starts to blur.

First, as recent commentators have pointed out (Giocoli, 2003; Weber, 1999), even if one focuses exclusively on the 1915 paper, ‘Slutsky’s position with respect to the relation between economics and psychology was not as straightforward as the above quotation seems to suggest’ (Giocoli, 2003, p. 75). Even the next few sentences of Slutsky’s introduction make it clear that ‘it does not seem opportune to disregard all connections existing between the visible and measurable facts of human conduct and the psychic phenomena by which they seem to be regulated’ (Slutsky, 1915, p. 27), and by the end of the paper he reasserts the need to ‘consider it necessary to complete the formal concept of utility in such a manner as to put the economic aspect of the problem of utility in close relation with the psychological one’ (Slutsky, 1915, p. 53). In addition to such general statements about the importance of psychology, Slutsky’s technical discussion in sections 10 and 11 of his paper undermines the ordinalism that he was supposed to champion. These sections conduct comparative statics analysis of a consumer with an *additively separable* utility function. Now, while additive separability was a common assumption in early consumer choice theory, it is, in fact, a *cardinal* restriction since it restricts the signs of the second partial derivatives of the utility function. Thus, a key portion of Slutsky’s technical analysis was based on a cardinal assumption that ‘would no doubt have seemed like a step backward to the days of W. S. Jevons, Alfred Marshall, and H. H. Gossen rather than a step forward’ (Weber, 1999, p. 413).

In addition to these arguments based exclusively on the 1915 paper, we also now have additional information about Slutsky’s position from some of his later work. As a result of efforts by John Chipman, two of Slutsky’s previously unpublished papers on economics have recently been translated (Chipman, 2004; Slutsky, 1926, 1927) and these papers,

along with the limited discussion of the philosophical foundations of Slutsky's theory that exists in the secondary literature (Smolinski, 1984), further undermine the argument that Slutsky's main goal was to improve the empirical foundations of economics by purging psychic phenomena. Slutsky did have critical things to say about hedonism—Böhm-Bawerk's hedonism in particular—but the alternative framework he advocated was nothing like the empiricist, more directly observable, foundations that have traditionally been associated with the ordinal revolution. Although the details of Slutsky's methodological position are not entirely clear from these two papers—perhaps because of the constraints his social political context imposed on his writing (see Barnett, 2004)—the bottom line is that Slutsky endorsed a *praxeological* approach to the foundations of economics that seems much closer to the *a priorism* of Ludwig von Mises than the proffered empiricism of Hicks, Allen or Samuelson. As Smolinski explains:

Slutsky believed that economic laws cannot be derived by induction from the study of concrete phenomena, from empirical statements about concrete events. They can only be deduced from an axiomatized system postulates of praxeology, the parent science of economics, the pure theory of *all* purposive activity, of which pure economics covers only one type. (Smolinski, 1984, p. 68)

Thus, in the late 1920s, as in his 1915 paper, Slutsky's views of the foundations of consumer choice theory seem to be much more indebted to mental state psychology than suggested by the standard ordinalist–empiricist caricature.

Lionel Robbins is the second major contributor to the ordinal 'escape from psychology' to be discussed in this section. Although Robbins is best known for the rejection of interpersonal utility comparisons, he is also known as a harsh critic of hedonism and a defender of the ordinalist revolution. Since his arguments about the cognitive meaninglessness of value judgements were consistent with the positivist ideas of the day, his interpretation of choice theory seemed to neatly combine the rejection of both psychology and interpersonal utility comparisons with the quest for more scientific foundations for choice theory and anti-hedonism.

Although Robbins and his supporters successfully convinced the profession that rejecting interpersonal utility comparisons was a corollary to the broader rejection of hedonism and cardinal utility in scientific economics, Robbins's own characterisation of consumer choice theory—both in his influential *An Essay on the Nature and Significance of Economic Science* (1952), first published in 1932, and in his later discussions of the topic—was decidedly non-eliminativist about mental-state psychology.

As is well-known, Robbins shifted the definition of economics from that which involved a domain of inquiry (decisions involving wealth) to a particular type of decision (that which involved choice under scarcity). For Robbins, scarcity is the 'scarcity of *given* means for the attainment of *given* ends' (Robbins, 1952, p. 46, emphasis in original) and the 'end' in consumer choice theory is the satisfaction of the agent's preferences:

It does not require much knowledge of modern economic analysis to realise that the foundation of the theory of value is the assumption that the different things that the individual wants to do have a different importance to him, and can be arranged therefore in a certain order. This notion can be expressed in various ways and with varying degrees of precision . . . But in the last analysis it reduces to this, that we can judge whether different possible experiences are of equivalent or greater or less importance to us. (Robbins, 1952, p. 75)

How do we know that economic agents have such ordered preferences? Robbins's answer was that we only have to look at everyday inner experience (i.e. introspection):

The main postulates of the theory of value is the fact that individuals can arrange their preferences in an order, and in fact do so . . . We do not need controlled experiments to establish their validity: they are so much the stuff of our everyday experience that they have only to be stated to be recognized as obvious. (Robbins, 1952, pp. 78–9)

Since preferences, the ends of consumer choice, are forward-looking they can not be—as with behaviourism, which Robbins calls a ‘queer cult’ (1952, p. 87)—purely objective or discovered by observation of behaviour; they are thus fundamentally *psychological*.

But even if we restrict the object of Economics to the explanation of such observable things as prices, we shall find that in fact *it is impossible to explain them unless we invoke elements of a subjective or psychological nature* . . . It is obvious that what people expect to happen in the future is *not susceptible of observation by purely behaviourist methods*. (Robbins, 1952, p. 88, emphasis added)

The bottom line is that because economics is fundamentally about choice under scarcity it must be based on a forward-looking notion of purposive behaviour, and that notion is fundamentally psychological and cannot be reduced to objective observation of the positivist–behaviourist sort: ‘It is really not possible to understand the concepts of choice, of the relationship of means and ends, the central concepts of our science, in terms of observation of external data’ (Robbins, 1952, pp. 89–90). The proper value theory for Robbins is ‘the subjective or *psychological* theory of value; and, as we have seen, it is clear that the foundations of this theory is a *psychical* fact, the valuations of the individual’ (Robbins, 1952, pp. 86–7, emphasis added).

Not only does Robbins require subjective psychic phenomena for choice theory, he also makes such concepts central to his argument *against interpersonal utility comparisons*. Why are such comparisons not available? Because they are not accessible to introspection.

Introspection does not enable A to measure what is going on in B’s mind, nor B to measure what is going on in A’s. There is no way of comparing the satisfactions of different people. (Robbins, 1952, p. 140)

Interpersonal comparisons are not available in economics, but introspectively obtained knowledge about the qualitative character of our psychic satisfactions certainly is, and the presence of the latter is the reason for the absence of the former. Robbins clearly needs both introspection and mental state psychology for his theory of consumer choice.

The last theorist to discuss in this section—Paul Samuelson—actually requires the least documentation since the argument that Samuelson ultimately reneged on his 1938 promise to remove the last ‘vestigial traces of the utility concept’ (Samuelson, 1938, p. 61) from consumer choice theory is now fairly well-established in the historical and methodological literature (e.g., Giocoli, 2003; Hands, 2001; Hausman, 2000; Lewin, 1996; Wong, 2006).

Samuelson’s original presentation of the consumption theory that came to be called revealed preference theory was in fact a *distinct* break from previous theories of consumer choice—cardinal *and* ordinal—and was sufficiently behaviourist to be correctly called an *escape* (or at least attempted escape) *from psychology*. Samuelson (1938) actually tried to do what the standard story credits the revealed preference revolution with doing—constructing consumer choice theory on strictly observable foundations that did require reference to the psychic mental states of the relevant agents: ‘dropping off the last vestiges of utility analysis’ (Samuelson, 1938, p. 62). The behavioural, operational and non-preference-based features of Samuelson’s 1938 theory are driven home by the fact that the term ‘revealed preference’ was not introduced in the original paper (the term became common after Samuelson used it in 1948). If well-ordered preferences exist then they can

be represented by an ordinal utility function and we are right back with the vestiges of utility theory; the purpose of Samuelson's original approach was not to 'reveal' preferences, but to provide a strictly operational theory of consumer behaviour *without preferences or utility at all*.

This objective changed in his later publications (Samuelson, 1948, 1950). The 1948 paper called the theory 'revealed preference' and the goal of the 1950 paper was 'to complete the programme begun a dozen years ago of arriving *at the full empirical implications for demand behaviour* of the most general ordinal utility analysis' (Samuelson, 1950, p. 369, emphasis in original). The latter paper, in particular, completes the link to the earlier (now evidently no longer problematic) ordinal utility theory. What had started out as a behaviourist programme that rejected the psychological foundations of choice theory, ended up being a means for scientifically bolstering precisely those foundations. As Stanley Wong summed up:

The upshot of our interpretation of the purpose of the theory is that the revolutionary significance of the Samuelson Theory is lost. The development of the theory does not represent a break with the tradition in economic theory in which consumer behaviour is explained in terms of preferences (and material circumstances). Consequently, the attendant philosophical and psychological controversies of utility theory, which Samuelson hoped to evade with his observational theory, are not exorcised from the corpus of economic theory ... (Wong, 2006, pp. 73–4)

Thus, we find that, with Samuelson, as with the others discussed above, the standard story seems well off the mark. There is no distinct break when psychology went out of consumer choice theory during the ordinal revolution. Recognising that sharp breaks did not exist in the work of Slutsky, Robbins or Samuelson leads us naturally to question the veracity of the standard story and to wonder exactly how it came to be the conventional wisdom. The next section will offer an alternative narrative, one that attempts to explain how the various moves in the history of consumer choice theory during the first half of the twentieth century might be understood in relation to psychology.

4. An alternative story about the relationship

Psychology in the seventeenth and eighteenth centuries was 'soul science' (Hatfield, 1995), but by the nineteenth century the soul was replaced by mental phenomena and psychic states—and, later, consciousness—consistent with Cartesian dualism, although the general commitment to explaining the psychic 'it' as scientifically as possible remained the same. The key tool for nineteenth century psychology was introspection—the inner observations that provided the empirical foundations for the science of mind. But the potential moral nexus carried forward from soul to psychic mental states as well, and the desire to maintain volition and free will in a way that was consistent with a scientific approach that uncovered causal mental relationships became an important theme in (particularly Victorian) psychology. As Lorraine Daston explains: 'Far from being a peripheral aspect of late-nineteenth-century British psychology ... this perceived tension between the moral necessity of free will and a law-governed mental science played a central role in the selection of the topics, approaches, and explanations, which dominated psychological discussion' (Daston, 1978, p. 192). John Stuart Mill (1874) provides an excellent example of using the 'method' of introspection as the basis for a compromise moral science of political economy that attempts to accommodate both scientific law and volition.

Early in the twentieth century psychology turned toward experimental approaches and behaviourism and thus away from both psychic phenomena and free will. By focusing on empirical regularities in observed behaviour, disciplinary psychology gained in scientific prediction and explanation, but gave up its role in understanding (and defending) human volition. These changes coincided with the deflation, and eventually the elimination, of introspection as a legitimate source of knowledge about human consciousness or behaviour (Lyons, 1986). Later, during the 1960s, disciplinary psychology went through what is often called the ‘cognitive revolution’ and, since that time, work in cognitive science and related areas has moved forward within a broad psychological research programme that is self-consciously scientific and yet reasonably comfortable referring to mental states and positing consciousness (Baars, 1986). Although the cognitive revolution clearly opened the door to the scientific legitimacy of a broad class of psychic phenomena unacceptable to the more radical versions of behaviourism, this ecumenicalism has not necessarily been extended to subjects such as free will and volition, which were so important to the (morally sensitive) psychologists of the nineteenth century.

The bottom line is that consciousness, mental states and introspection as a source of evidence for such phenomena, were part of disciplinary psychology until they were challenged at the end of the nineteenth century and evicted by behaviourism and other experimental approaches during the first part of the twentieth century. Now consciousness and mental states are back in and, as such, they are again appropriate topics for scientific inquiry, but the nineteenth-century emphasis on volition, free will and the associated moral dimension of the discussion has disappeared from disciplinary psychology. Things changed over time, but at any specific point in time the majority of mainstream psychologists seemed to be willing to make a *commitment* about whether it was more important to retain and defend a notion of human volition or whether it was more important to support disciplinary practice that was in compliance with prevailing views about proper scientific method.

Mainstream economics was not so willing to commit. The central thesis of my alternative interpretation of the history of consumer choice theory is that economists were never wholly willing to commit to one or the other and always wanted both—*volition* (and its associated normative implications) and *causal science* (and the predictive power, explanatory understanding and the epistemic distinction it brings)—and this explains the kinds of psychology that were and were not acceptable. If we call the problem of retaining a view of human agency based on free will and individual choice the *volitional* problem, and the problem of providing a theory of consumer choice that seemed to be consistent with dominant views about scientific knowledge the *scientific* problem, then the profession was not willing to accept a solution to one of these problems that did not also offer a solution to the other. The profession was willing to make trade-offs between the quality of the answers provided to these two problems on the margin—depending on context and circumstances—but a corner solution that solved only the volitional problem or only the scientific problem was never acceptable.

In the middle of the nineteenth century, when Mill’s compromise seemed to provide a solution to both problems, all was well, but by the end of the century, when the volitional gain provided by the introspective solution was being swamped by the growing criticism of the profession’s scientific credentials, Mill’s compromise was no longer adequate. Although the profession could have accepted a behaviourist view (Samuelson’s original revealed preference theory) and thus solved the scientific problem, to do so would have abandoned the volitional problem since the economic agent would be reduced to some

version of a constant conjunction of empirical observations (of stimulus and response in radical behaviourism).

Mainstream economists' attitude about behaviourism is particularly important since it was a very powerful force shaping many of the human sciences during the twentieth century. Despite the lip-service paid to behaviourism over the years, economists have never been willing to accept behaviourism's plastic view of human nature or its methodological emphasis on animal experiments (McDonough, 2003). In this sense the ordinal revolution was a perfect solution to the epistemic credibility problem of the late nineteenth century. It allowed the profession to jettison its problematic reliance on hedonism and cardinalism, while at the same time retaining the idea that consumer behaviour was based on the agent's free *choice* of the bundle of goods that most satisfied his/her preferences. Robbins's criticism of behaviourism is particularly telling in this regard, since he clearly saw the task of maintaining a balance between the solution to the volitional problem and the scientific problem as fundamental to the health of economics. Strict behaviourism would have meant that there was no *choice* in consumer choice theory, and that was never acceptable, either to Robbins or to most economists.¹

As it turned out, revealed preference theory actually ended up bolstering the scientific credentials of the (ordinal) utility theory that it had originally been designed to replace. After the development of the strong axiom of revealed preference, it was just a few short (though mathematically sophisticated) moves to prove the general equivalence of the revealed preference and ordinal utility approaches to consumer choice theory (Kilstrom *et al.*, 1976). Since revealed preference theory was viewed as relying on nothing more than the observed consistency of choice—note it is 'choice' and not just behaviour—its equivalence with the 'utility hypothesis' thus firmed up the empirical foundations of the earlier theory. The observability of the 'revealed' part solved the scientific problem, while the motivational aspect of the 'preference' part solved the volitional problem. If economics had rushed into the arms of behaviourism during the 1930s the volitional problem would need to be surrendered and revealed preference would never have been in the position to help offer a simultaneous solution to both problems. Mental state psychology could not be allowed to be totally in because of the scientific problem, but it could not be allowed to be totally out because of the volitional problem. This failure to commit (or ambiguity, or balance, depending on your perspective) actually ended up being a source of strength for consumer choice theory and economics more generally.

Even if one accepts my alternative story, one is still left with the question of why. Yes, *if* the profession was never willing to accept an answer to the volitional problem that did not offer something in the way of a solution to the scientific problem—and *vice versa*—then it would explain the actual positions of various economic theorists, but that still leaves us with the question of why the profession was so enamoured with these two commitments. Why is it exactly that economists were never willing to give up totally on either one of the two problems?

The answer to why the profession needed to adapt to the changing characterisation of proper scientific practice is pretty straightforward. To do otherwise would have been a serious problem for marginalism. Neoclassical economics ascended to its position *as* mainstream economics in large part because it won the battle of convincing the profession

¹ This is not to say, of course, that mainstream economics has adequately solved the choice problem even in the absence of radical behaviourism: a point that has been raised by a number of critics over the years including G. L. S. Shackle (see Loasby, 1976, for example) and Tony Lawson (e.g., Lawson, 2003).

that it was, in fact, legitimate economic science (and that other research programmes were not). What counted as empirical evidence changed somewhere between 1870 and 1930, and thus psychology (as the introspective non-science of psychic phenomena) needed to be out. Although the profession always had other interests, these interests could never be allowed to trump the discipline's ability to effectively defend its position as an empirical science.

Although it comes as no surprise that economists wanted to keep up with the times epistemologically—and to accept or reject various aspects of psychology as they saw fit on these grounds—this only answers half the question of why mainstream economists were reluctant to accept a solution to the scientific problem that did not also provide an answer to the volitional problem. We also need an answer to the question of why the profession was not willing to completely abandon the volitional agent, and the answer to that question seems to be less obvious than why it was necessary to be scientific. So why did economists never adopt a version of consumer choice theory—such as strict behaviourism—that would characterise consumer behaviour as anything other than a free and volitional choice?

There are undoubtedly many reasons for the profession's conceptual preferences, but I would argue that at least one part of the explanation is that economists wanted to hold on to free will and volitional choice in human action for the same reason the Victorian psychologists and Mill wanted to defend it: because of the normative implications of having it otherwise. Consumer choice is at the heart of the way that not only economists, but members of the general public, think about how market economies work. Market economies are based on consumer sovereignty—consumers freely *choose* the goods that they most prefer (given the constraints they face)—and such free choice is an essential, and moral, difference between market economies and other ways of organising economic activity. Theories that provide a mechanical or non-volitional characterisation of consumer behaviour—either psychophysiology or strict behaviourism—do not support this notion of free choice and thus simply will not do.¹ Solving the scientific problem is very important—and the part of the story that is emphasised in the standard story—but any such 'solution' is only viable if it preserves intact the fundamentally volitional aspect of agent behaviour.

Although this explanation certainly does not exhaust the reasons why economists have traditionally been unwilling to accept a theory of consumer behaviour devoid of volition—the relationship between consumer choice theory and welfare economics has certainly played a role, along with other factors—it does seem to be very important. Taken together with the scientific problem we have a reasonable explanation for why economists have adopted the traditional story about the history of consumer choice theory (and its relationship to psychology) as well as why the specific theories offered by various contributors took the shape that they did. The scientific problem explains why a particular kind of psychology needed to be officially out, but the volitional problem explains why the discipline was never comfortable completely jettisoning the free-willed agent. It also explains why the theory of consumer choice articulated early in the twentieth century and refined in various ways by revealed preference, insisted that it was a complete escape from psychology even though it was unwilling to go all the way in the behaviourist direction.

¹ Milton and Rose Friedman titled their popular book *Free to Choose* (1990) not 'motor responses to brain chemistry' or 'conditioned response in the marketplace'.

5. Some concluding thoughts

My argument has been presented in three parts. Section 2 recited the traditional story about psychology being in, then out, and (perhaps) back in, during the history of consumer choice theory from the neoclassical revolution to the twenty-first century. Section 3 tried to sew the seeds of doubt about the traditional narrative by discussing three specific economists (Slutsky, Robbins and Samuelson) generally considered to be exemplars of those driving psychology-out consumer choice theory, who, on closer examination, actually involved some version of mental-state psychology. In the last section have I tried to offer an alternative explanation of the relationship between consumer choice theory and psychology that explains both why economists have taken the positions they have regarding psychology, and why this, seemingly more consistent story, is not the profession's standard narrative. In the last few paragraphs I will try to address the issue of where all this leaves us now; in other words, what this alternative way of thinking about the history of the relationship between psychology and consumer choice theory might suggest about the possibilities for reconciliation.

So if we fast forward to the recent literature on behavioural economics, experimental economics, neuroeconomics and such—a literature that suggests, at least on the surface, that psychology is, or soon will be, back into economic theory—what do we have? Is this recent research pointing as clearly in the direction of rapprochement as some (including the discussion in Section 2 above) would suggest? Or perhaps, rather than rapprochement, these (and other) recent developments in economic theory will cause (or have already caused) the end of neoclassical economics and the entire rational choice-based theory of consumer behaviour as some have argued (Colander, 2000; Davis, 2006, 2008). Or perhaps the result will be new *synthesis* informed by some combination of recent developments in evolutionary theory, game theory, neuroscience, psychology, economics and other fields; a new synthesis that transcends the (currently defined) fields of both 'psychology' and 'economics' and therefore the entire question of the 'relationship' between them (Gintis, 2007; Ross, 2005).

My own position is that it is far too early to call how the relationship between the economic theory of rational choice and psychology—or any new behavioural synthesis involving elements of these and other fields—will turn out. However, the above examination of the forces at work in consumer choice theory during the first half of the twentieth century can give us an indication of some of the forces that will play an important role in determining the eventual result. There seem to be two clear lessons—or things to watch for—in the current debates and in the future.

First, it will not be an issue of whether 'psychology' is in or out. It is now and will be in the future, as it was during the 1930s, about which particular kind of psychology, or which aspect of psychology, economists find appropriate given the goals/interests of the individual economic theorists and/or the profession more generally. It was never a matter of simply whether psychology was in or out of economists' characterisation of individual choice in the past, nor will it be in the future. The second lesson is that both the science question and volition question will matter going forward, as they did in the past. Philosophy of science changes, as do the technical tools available to economists (the magnetic resonance images of neuroeconomics being an important example), as well as the intellectual community's conception of exemplary natural science (witness the shift from physics to biology in the last few decades), and these things will continue to influence the course of economic theorising. Finally there is the issue of volition, choice and free will. Perhaps it will continue

to be an issue that conditions the profession's conception of adequate theorising as it did during the twentieth century. But perhaps not; perhaps economists' traditional conception of the free-willed economic agent will be surrendered to—or radically modified by—advances in behavioural science (Ross *et al.*, 2007). As I say, I think it is too early to call any of these things, but hopefully this paper has provided the reader with a better understanding of how these forces have influenced the relationship between the economic theory of consumer choice and psychology in the past.

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