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Defending Marshall's 'masterpiece': Ralph Souter's critique of Robbins' *Essay*

Anthony M. Endres and M. Donoghue*

We examine Ralph W. Souter's defence, in the 1930s, of Marshall's *Principles* against Robbins' attempt to recast economics as a 'purely formal science of implications'. Souter elaborated on Marshall's invocations progressively to increase the realism of economic science and contrasted this perspective on Marshall with Robbins' atomistic bias, neglect of historical time and irreversibilities, arbitrary restrictions on the scope of economic science and emphasis on logical and mathematical form over content. Souter demonstrates that Robbins takes a Walrasian-inspired perspective on Marshall's equilibrium concept whereas the 'authentically Marshallian' equilibrium notion generally incorporates potential for endogenous change. On this and other matters Souter has doctrinal priority in drawing attention to Marshall's incipient 'evolutionary economics'.

Key words: equilibrium, evolutionary economics, Marshall, Souter, Robbins' *Essay*
JEL classifications: B20, B21, B40, B41

Shall we any longer entertain as a serious scientific possibility the blasphemous proposal that [Marshall's] 'biological analogies' be stripped like excrescences from his noble and vitalizing masterpiece to make vulgar holiday for two-dimensional geometers? (Souter, 1933B, p. 128).

1. Introduction

The recent appearance of the *Elgar Companion to Alfred Marshall* (Raffaelli, Becattini and Dardi, 2006) attests to the richness and fertility of Marshall's ideas and to many achievements in Marshallian economics from the 1890s and throughout the twentieth century. That there are numerous themes and sub-themes in modern economics with an identifiable Marshallian pedigree is hardly surprising given Marshall's high standing in the economics profession up until the 1960s when stronger Walrasian currents started to rise to prominence in the more formal, theoretical branches of the discipline. Many contributions to the *Elgar Companion to Alfred Marshall* illustrate a revival in modern heterodox economics of certain neglected features of Marshall's work including, for example, evolutionary aspects, historical and institutional themes, methodological issues and applications that directly address the concerns of economic policy. It is precisely these

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Marshallian themes, as well as institutional and historical analysis that Robbins in his *Essay on the Nature and Significance of Economic Science* (1932, 1935) attempted to marginalise in the celebrated definition of positive economics as a pure logic of choice or a science of allocative behaviour. Thus, Robbins' (1935, p. 16) well-known definition: 'Economics is a science that studies human behaviour as a relationship between ends and scarce means that have alternative uses'.¹ Robbins's definition, modified slightly from time-to-time, gradually persisted in mainstream economics textbooks (Backhouse and Medema, 2007); it favoured the rise of formalistic methods of analysis and Walrasian economic theorising in the mid-twentieth century. Moreover, Robbins's definition restricted the domain of economic science to the study of all forms of economising thereby implying a very specific outlook on the subject matter of economics and on the appropriate (exclusively deductive and prediction focused) methods for treating it (Lawson, 2003, pp. 158–61).²

In this paper we seek to document one series of prescient contributions to the debate over the first edition of Robbins' *Essay* (1932), identifying vital themes in Marshall's economics that were not well canvassed in the 1930s. We offer a complete exposition of the work of Ralph W. Souter (1897–1946), especially his review of Robbins' *Essay* (Souter, 1933A) and his subsequent book, *Prolegomena to a Relativity Economics* (Souter, 1933B). His point of departure in that book is founded on Marshall's *Principles*, that 'noble and vitalizing masterpiece' (p. 128) which, he maintains, had been misunderstood by Robbins, Schumpeter and others. Souter offers 'a systematic explication of the underlying methodology of Alfred Marshall's *Principles*' (p. 92).

Souter (1933A, p. 379) argues that Robbins' conception of economics reduced the discipline to a 'purely formal science of implications'—a claim substantially equivalent to the position of modern 'critical realists' in their assessments of modern mainstream economics (e.g. Lawson, 2003; Lewis, 2004). In several of his other contributions Souter objected to concessions made by Schumpeter and Kuznets to this 'purely formal science' orientation. He argues that the subject matter of economics must be conceived in a very particular and inappropriate way if practitioners are to prosecute the formal science of economics as conceived by Robbins. In short Souter was reflecting on the necessary 'ontological' outlook implicit in Robbins (1932).³ In Souter's view, the analytical procedures and conceptual tools proposed by Robbins were not just inconsistent with Marshall's definition of economics; more crucially they conflicted with the nature and structure of reality presupposed by Marshall, and later by Marshallians.

Souter's work has not been thoroughly examined in the literature.⁴ Nevertheless, as we shall demonstrate in this paper, the importance of his work in the 1930s is underscored by

¹ Robbins then acknowledges in a footnote some intellectual precursors who influenced the framing of this definition, including Menger, Mayer, Strigl and Mises. These writers provided 'the foundations of what later has been called the pure logic of choice' (Hayek, 1978, p. 276); see also Addleson (1984); O'Brien (1990, pp. 162–3) and Endres (1997, pp. 24–5, 58, 229). As Robbins (1932, p. 13) argued, under conditions of scarcity, all economic behaviour 'assumes the form of choice'.

² Robbins wanted to restrict the scope of economic science to a particular brand of analysis. He did not propose to restrict the broader discipline of economics.

³ Souter's publications in the 1930s are best described generally as occupying the field of ontological enquiry in economics. That enquiry aims 'to determine the (usually implicit) conception of the nature and structure of reality presupposed by the use of any specific set of research practices and procedures' (Lawson, 2003, p. xvi).

⁴ One exception is Geoff Hodgson (2001, pp. 197–9, 209–10); he provides a capsule summary of Souter's place in the debate over the nature of economics in the 1930s. Malcolm Rutherford (2004, p. 51) includes information on Souter's doctoral training at Columbia in the 1920s and early 1930s. Roger Backhouse and Steve Medema (2007) mention Souter on several occasions and quote from his review of Robbins (1932) without fully appreciating the ontological significance of his objections to Robbins.

the reactions of contemporaries to his contributions: Frank Knight, Lionel Robbins (in the preface to the second, 1935 edition of the *Essay*) and Talcott Parsons in particular.¹ Milton Friedman, who was taught by Souter at Columbia in the 1930s, was not complimentary to Souter's project: 'Ralph Souter, another of my professors, was a New Zealand economist. He had written a book titled *Prolegomena to a Relativity Economics*, which professed to be an original approach to economic theory but was almost unreadable, entirely abstract and filled with jargon' (Friedman and Friedman, 1998, p. 46). Friedman's recollection may have been accurate as far as the style of Souter's book was concerned and that style made it difficult for readers at the time to ascertain the substantive content of his work (e.g. Knight, 1934, p. 225). The objective of this paper is thoroughly to investigate the substance of Souter's criticisms of Robbins' *Essay*.

The next section of this paper will offer a concise intellectual biography of Souter. Section 3 appraises the main points in Souter's (1933A) critique of Robbins (1932). Section 4 examines principal supporting propositions in Souter (1933B), which are developed to bolster his critique of Robbins (1932). Section 5 considers contemporary reactions to the Souter critique and elaborates on Souter's purported 'explication' of Marshall's 'underlying methods'; the relationship between static and dynamic economic analysis together with the concept of time in economics; the nature of the equilibrium concept Souter attributes to Marshall and his suggestions for extending and improving upon Marshall's demand–supply analysis. In Section 6 comparisons are drawn between Souter's ideas and more recent interpretive studies of 'evolutionary' themes in Marshall's work. We find that Souter adopts an ontological stance (originally suggested by Marshall) when inveighing against incursions from Robbins, Schumpeter and others who had welcomed the opportunity for treating economics as a 'purely formal science'. *Inter alia*, the formal science approach relied on a notion of equilibrium that Souter, on behalf of Marshall, wholeheartedly rejects. Section 7 summarises our main conclusions.

2. Souter: intellectual biography

Ralph Souter attended Otago University in Dunedin, New Zealand, as an undergraduate either side of the First World War. He completed a double MA in both Philosophy and Economics in 1923 (Donoghue, 2007, p. 261). He imbibed two main doctrinal influences while at Otago. First, in philosophy, Hegel was a major figure in his early intellectual development, due largely to the training he received from his philosophy instructor, the Hegelian philosopher F. W. Dunlop. Souter's subsequent methodology of economics showed the impact of both Hegelian philosophy and certain developments in the history of physics, particularly views on early twentieth century physics as expounded in the works of A. S. Eddington. Souter's borrowing of terminology from physics is very distinctive in his critique of Robbins. Furthermore, the Hegelian view of history appeared to give him the impetus to appreciate the interdependencies of various social sciences as well as their reliance on ethics, the connections between the development of social science and the environment under examination, and the 'organic' nature of social and economic change.

Second, in economics, his early training was founded to a large extent on the eighth edition of Marshall's *Principles* (1920). His external examiner for the MA was

¹ Fritz Machlup (1936, p. 39) made a dismissive comment on Souter's work, maintaining that it was 'more heavily interlarded with Hegelian philosophy than a normal economist can stand. A still great antipathy to methodology was the outcome of the discussion'. See also Terence Hutchison (1938, pp. 62, 78) who quibbles over minor points in Souter (1933B).

J. S. Nicholson, an important figure in the early twentieth century 'Marshallian School of Economics' (Beccattini, 2006). Souter completed a PhD in economics at Columbia University in 1930; his dissertation was guided by Wesley Mitchell, James Angell and John Maurice Clark and later appeared as a book on 'relativity economics' (Souter, 1933B). He lectured at Columbia until 1935 and then accepted the position of Professor of Economics at the University of Otago. His academic career was comparatively short. Most of his published work appeared before he left Columbia. Apart from his two major works dealing with 'relativity economics' and the associated critique of Robbins, which we shall discuss in detail in subsequent sections of this paper, Souter (1930A, 1930B) offers some insights into what may be called the theory of economic dynamics. In these publications he demonstrated, for example, the influence of Marshall's ideas on the long period supply curve. Marshall's long period curve allowed for irreversibilities in the economy conceived as a historical process; it also embodied innovation, which was not easily accounted for in what Souter understood were standard equilibrium treatments of the supply curve. In responding to Simon Kuznets' (1930) contribution showing the inapplicability of Walrasian-inspired equilibrium economics to the dynamics of the business cycle, Souter (1930A) pleaded for the rehabilitation of Marshall's more highly developed treatment of the equilibrium concept. He objected to Kuznets' assertion that in *all* equilibrium conceptions of the economy departures from equilibrium must be due to exogenous disturbances (war, famine, etc.), which, in principle, are adjusted to instantaneously. For in Marshall's 'monumental life work', especially in connection with his biological *obiter dicta*, the economic system is apprehended as an organism in which 'incentives to growth or change may arise within the organism as well as the environment and...so-called dynamic adjustment is, in the sphere of organic life, merely an abstract phase of concrete organic adaptation' (Souter, 1933A, pp. 53, 55). According to Souter, leading researchers on business cycles, including Kuznets, should not exclude considerations of Marshall's ideas on dynamic change simply because he used the term equilibrium.

In New Zealand from 1936 until his death in 1946, Souter produced only one major publication. He extended his broad philosophical approach to economics by considering the theory of economic policy. Here we again find a notable Marshallian theme. Souter (1939) promoted Marshall's idea of 'economic chivalry' in a debate among New Zealand economists over the insulation of the local economy from international market forces. He argued that as a 'vigorous infant nation' New Zealand would not be served well by 'an all-embracing State Socialism'. In a similar vein to Marshall (1907) Souter warned of the menaces associated with collectivism. By contrast, implementing a system based on 'economic chivalry' would lead neither to a crass 'materialism nor to totalitarianism' (p. 13). He implored economists to entertain larger questions of economic philosophy; this meant retaining in view Marshall's comprehensive (and more precise) conception of 'maximum net advantage' as part of a systematic approach to economic and social policy and as a means ultimately to realising the possibilities inherent in economic chivalry. In this view it was entirely inappropriate to consider the economic role of government in isolation. The government's responsibilities in economic and social reform must be considered as a whole; these responsibilities need to mature to the point of advancing beyond a 'purely manipulative or compensatory mechanistic approach' such as formulating technical methods for controlling business cycles using a finely calibrated interest rate policy, formulating methods for providing public countercyclical expenditure and designing complex regulations for restricting international trade. For Souter 'economic chivalry' necessitated the creation of a decent society in which the role of government was to

encourage an organic process, *viz* the 'diffused moralisation of the economy' in harmony with the economy understood as a progressively evolving organism. A truly 'socialised individualism' would be the happy outcome (Souter, 1939, p. 14). In his last publication, Souter (1939) offered an elaboration of Marshall (1907) in a concrete case; it was strikingly consistent with modern interpretations of Marshall's agenda for creating a fair and noble society (e.g. Gerbier, 2006).

3. The review of Robbins' *Essay in the Quarterly Journal of Economics*

Souter (1933A, p. 378) set the scene for a comprehensive review of Robbins (1932) with an assertion that Robbins was laying down a challenge to the 'further organic development of the Classical Tradition . . . that has so far received its highest integration in the work of Marshall'. For Marshall, economics was one of several disciplines devoted to social analysis. As always, certain types of analysis were excluded within specific disciplines by a predominant ontology, that is, in Souter's expression, by the creation of 'distinctive attitudes towards a common "subject matter"'. Robbins' intention was in fact precisely to shape a particular attitude toward the subject matter of 'economic science' as a branch of social analysis; that science would have a distinctive scope and method giving it independence from other social sciences. In short, as is now well known, Robbins confined the scope of positive economics to the study of allocative behaviour in an environment of resource scarcity. Any kind of allocative behaviour qualified for inclusion in the subject matter of economics. Economics was substantially equivalent to a science of choice. By contrast with Marshall and earlier classical writers who had been exclusively concerned with the causes of material welfare (Robbins, 1935, pp. 6–9), Robbins's formulation radically changed the focus of attention: the core subject matter of economics was to be concerned with all human activities involving choice (which, in addition, complemented the standard infrastructure of price theory).

Souter correctly pointed out that Robbins intended to prescribe a particular form for analysing choice. Choice was always and everywhere to be regarded as consistent; it was to be apprehended as a sequence of behaviours forming a 'rational unity' (Souter, 1933A, p. 384). As Souter remarked wryly, Robbins's formulation could apply equally to the allocative behaviour of a Crusoe or a Lenin. By definition, the Robbinsian choice problem applies in any system of economic organisation (pp. 381, 388).

In the Robbinsian definition, the scarce *means* of choice as well as the technical methods for their efficient use are given for the purpose of analysis. The *ends* of choice are indisputable goals of economising behaviour; they can be studied in a value free manner. Economic science is for Robbins 'entirely neutral' as far as choice is concerned; it need not beg any ethical questions (Robbins, 1935, pp. 32, 56 n. 2, 84–6). Furthermore, there is no need for economists to trespass into psychology, sociology or physiology to understand, respectively, the process of choice, the socio-institutional determinants of choice or the biological basis of human needs that may originally drive choice behaviour. Finally, the ends of economising behaviour need not have a materialist basis as required by Marshall and the classical economists.

The abstract representation of economising behaviour proposed by Robbins (1932) had its origins, at least as far as the intellectual influences acting on Robbins were concerned, in second generation 'Austrian' economics (Hans Mayer, Ludwig von Mises, Paul Rosenstein-Rodan and Richard Strigl) (Endres, 1991A, p. 280). Specifically, Souter recognised this influence in the close correspondence between logic-of-choice theorising of

Hans Mayer and Robbins's formulation.¹ The simplifying assumptions in the 'Austrian' approach enabled the construction of a choice framework for a generic, rational economic agent.² Souter labelled this 'static formalistic theorizing', which is to be contrasted with studies of economising 'in the concrete' (Souter, 1933A, pp. 382, 383). This type of theorising was a precursor to the construction, mostly post 1935, of fully axiomatised and mathematical systems representing, *inter alia*, the characteristics and conditions facing the generic economist.

Against 'formalistic theorizing' Souter preferred to understand human behaviour as more often irrational and error-ridden. Moreover, actual behaviour is an intermixture of values, psychological and physiological drives, and the result of history—all of which were legitimately within the purview of economic theorists and all of which added substantive content to the analysis of economising.³ The concentration by the Austrians and Robbins on the mere form of economic theorising led to a 'static' outlook on their subject matter, whereas the path of history might be instrumental in influencing the formation of the ends of choice. In an article pre-dating the review of Robbins (1932), Souter (1930A, p. 60) maintained that economists can 'change their modes of response (in many instances unpredictably) with the passage of time'. In his review he remarks, similarly, that individual economists must be endowed 'with the power to transcend Time and to "look before and after"' (1933A, pp. 387–8). The generic agent in Robbins is not so endowed.⁴

Souter's criticism of Robbins's position is summarised in the following passage:

an actual, static abstract system of 'preferences' is accepted as a datum behind which, as 'economic theorists' we are forbidden to go. [Economics] . . . is merely the *formal implications* of 'human behaviour'—regarded as an abstract activity. (Souter, 1933A, p. 383 italics in original)

Nothing in this passage could have been further from Marshall's objective of 'pursuing the concrete'. Marshall was much less interested, according to Souter, in employing highly abstract chains of deductive reasoning. Robbins, by contrast, appeared to be insistent on turning economic science into a narrow, 'abstract formal' discipline putatively 'in pursuit of perfect formal precision'. In fact, consistent with Robbins's objective would be the elimination of references to underlying causes of material welfare and, in the limit, the transformation of economics into pure mathematics (Souter, 1933A, p. 385). Again, on Souter's reading of Marshall, 'true' precision in economics was achieved by lowering the level of abstraction and removing mathematics to appendices, thereby enhancing the ability of economists to understand and explain real economic phenomena such as economising behaviour (pp. 385–86).

Robbins (1932, 1935) founded the 'significance of economic science' on analysing generic human behaviour as an abstract relationship between scarce means and competing

¹ Though we should be mindful of the fact that, while 'Austrian connection in Robbins's work is thus important. . . it is not exclusive of other influences or completely overwhelming' (O'Brien, 1990, p. 167).

² Thus Robbins' (1932, p. 136) definition of 'rational' turns on the notion that economists 'know' what they prefer and are fully 'aware of the objective implications of choice'.

³ Souter (1933B) is the first economist to use the term 'economic formalist' to describe those involved in this kind of theorizing (p. 387). Elsewhere he uses the phrases 'formalistic economic theory' (p. 386) and 'pure formalist' (p. 394) to indicate the trend in mainstream economics toward overly abstract approaches to the subject matter of the discipline. On the development of formalism in twentieth century economics see Arjo Klamer (1995). Mark Blaug (2003, p. 145) refers to a 'formalistic revolution' post-1950, which was 'marked . . . by an absolute preference for the form of an economic argument over its content'.

⁴ Souter's lament on the absence of history in the Robbinsian scheme is reminiscent of Thorstein Veblen (1898, p. 389) who excoriates traditional representations of the 'economic man', which give that agent 'neither antecedent nor consequent'.

ends. The generic agent acted rationally in the sense that it possessed an 'ability to choose with Knowledge' (Robbins, 1935, p. 157). The core of economic science was the pure logic-of-choice and it provided the behavioural foundations for price theory. Now according to Lawson (2003, p. 160) 'Robbins seems to leave little doubt that economics is not about understanding action as it occurs . . . *but about facilitating a tool or technique of rational action*' (italics in original).¹ Souter (1933A, p. 390) expressed this very point: there was no need, following Robbins, for economists to know the 'concrete nature' of an economiser's 'means and end'. Therefore, there is no scope in economics for understanding actual choice. Five main supporting propositions make up Souter's critique of Robbins's fundamental logic-of-choice technique. We shall now deal with each of these *seriatim*.

4. Five core propositions in Souter's critique

4.1 *Arbitrary restrictions on the scope of economic theory*

The construction of economic theory cannot meaningfully be carried on independently of the insights gained by, and methods employed in, other social sciences (Souter, 1933B, pp. 38–9).

Economics is necessarily and inevitably dependent upon sociology, upon psychology, upon technology. And its development is dependent upon, and in innumerable ways limited by, their development. It is therefore in the interests of all alike to effect organic relationships one with the other. (Souter, 1933A, p. 399).

By comparison with more harmonious relationships among the natural sciences in the 1930s, Robbins contributed to a discernible atmosphere of 'pathological mutual distrust' between economics and other social sciences. And Robbins' insistence on distancing the analysis of economizing behaviour from psychology and ethics reinforced this pathology.² Souter (1933B, 94n) proceeded to use the phrase 'economic imperialism' for the first time in economics, though he did not mean that it should imply the use of the logic-of-choice model to trespass on the domains of other social sciences. Thus, the

salvation of Economic Science in the twentieth century lies in an enlightened and democratic 'economic imperialism', which invades the territories of its neighbours, not to enslave them . . . but to aid and enrich them and promote their autonomous growth in a very process of aiding and enriching them.³

4.2 *The neglect of time*

The logic-of-choice formulation is an 'abstraction from Time and a rational ordering of activities in Time' (Souter, 1933A, p. 389). Souter meant to communicate several

¹ This reading of Robbins' procedure is confirmed by his contemporaries: Knight (1934, p. 228) and Parsons (1934, pp. 513, 517); see also Kirzner (1960, ch. 6) and Addleson (1984). Recently Ross (2005, p. 90) stated the matter as follows: 'Robbins does not . . . imply that economic analysis aims at describing the causal mechanisms of choice . . . Economics studies instead the *abstract* logic of choice, identifying by formal deduction the constraints on behaviour that must follow the *mere fact* that choice among scarce objects of preference goes on' (italics in original).

² In a lecture predating the *Essay*, Robbins was adamant: 'I doubt whether anything which has been written by psychologists has the slightest value for an economist' (cited in Susan Howson, 2004, p. 430). Recently Shira Lewin (1996, p. 1295) rediscovered 'a pathological pattern in the relationship between economics and other human sciences' dating from the mid-twentieth century. Lewin's article deals specifically with economists' 'declaration of independence from psychology' (p. 1319).

³ Souter was the first to use the term 'economic imperialism' in social science discourse, a point that has been noticed by historians of sociological thought; see, for example, Swedberg (1990, p. 14).

important lessons in making this statement. First, economists who adopted Robbins' suggested theorising technique are barred thereby from investigating the formation of economisers' ends (alternatively, 'preferences'). Preferences are likely to be 'the result of a process' that individuals had formed by past experience and continuously remoulded as they reflected on past errors in attempting to achieve their ends. Second, and more importantly, Souter interprets Robbinsian economising activities as a succession of discrete, robotic, reversible acts; they are represented as a 'mere formal mechanics' (p. 389). In analysing the construction and use of traditional two dimensional demand schedule representations of consumer choice, Souter (1933B, p. 44) draws a distinction between 'functional time' and 'historical time'. Abbot Usher (1949, p. 148) noticed that Souter's 'functional time' category was equivalent to the more widely known 'Newtonian time'. Newtonian time was 'spatialized' in that 'movements may proceed indifferently in either direction'. Scientific procedures in the Newtonian paradigm were set in terms of completely 'reversible temporal relations'.¹ Following certain contemporary developments in physics, Souter understood that time, space and mass are not only inseparable; they are relative to the observer.² No meaning in this view could therefore be given to isolated instants of time (independently of a real observer) or to the absolute instantaneity of events (such as present economising decisions and present demand prices). By contrast, O'Driscoll and Rizzo (1985, p. 53) demonstrate how in Newtonian scientific procedure, present and future cause and effect relations are established instantaneously. Such procedures were anathema to Souter (1933B, pp. 36–9). Spontaneous discovery and 'creative emergence' (p. 34) in the economizing process could not be explained. Moreover, the 'abstract apparatus' of the demand curve relating price and quantity in Newtonian time is not congenial to Souter's aspiration to treat the subject matter of economics *viz*-economic life as uniquely contextual and also developmental. Narrowly conceived by post-Marshallians, the demand curve is 'intrinsically incapable' of exploring 'the realistic sociological, technological and psychological factors whose concrete processes it symbolically depicts' (Souter, 1933B, p. 38).

4.3 *Individualistic and atomistic bias*

In Robbins' scheme economising is undertaken by fully informed individuals. These individuals are conceived as socially isolated 'atoms' occupying an 'individualistic economic universe' (Souter, 1933A, pp. 391–2). For Robbins, economising may also take place in a collective arrangement, that is, by a 'collocation of atomistic individuals or their representatives'. While the generic economisers in Robbins's logic-of-choice scheme have already calculated over the full, objective consequences of their choices, collective choice has a different informational basis. Advice from 'an economist' is a prerequisite for collective economising. The economist must 'counsel the atoms never to act collectively without knowing' the full costs and benefits of choice. Moreover, the economist's advice cannot be ambiguous, though Souter points out that, in this role, inevitably economists must subordinate their economic science to philosophy (p. 393). Robbins would not have

¹ Here Souter (1933B) betrays the influence of A. S. Eddington's (1929) *The Nature of the Physical World*, which he frequently cites. Eddington provides an interpretation of Einstein's theory of time and space (Souter, 1933B, p. 36 ff).

² Gerald O'Driscoll and Mario Rizzo (1985, p. 53) also use the term 'Newtonian time' paralleling Souter's category—'functional time'. In the Newtonian conception (as compared with Einstein's) 'time is spatialized; that is, its passage is represented or symbolized by "movements" along a line . . . [T]ime is fully analogized to space, and what is true of the latter becomes true of the former'.

been comfortable with this conclusion given his desire completely to segregate economics from other disciplines.

There is, however, much more to Souter's critique of Robbins's atomistic bias. Souter was especially concerned with ontological implications. The so-called 'atomistic economic universe' forming the subject matter of Robbins's economic science, is presented as a determinate, 'mechanical constant'. Souter asserted, by contrast, that economists be concerned with economic life as an open-ended 'organic' process (p. 393). In respect of the most appropriate analogies to be employed in economists' discourse, Souter proposes two options:

- (i) First, he asks what would be the 'significance of economic science' (to use Robbins's phrase) if the point of departure for defining economising behaviour was 'an expanding economic universe' rather than an environment with ever present resource scarcity? (Souter, 1933A, pp. 395–6).
- (ii) Second, in his book contribution he proposes that economists examine economising by thinking in terms of an organic process. Here the context of choice is analogous to a 'living self-developing system' (Souter, 1933B, 36 n.).

The use of (i) and (ii) were complementary; they both express open-endedness rather than determinateness. For example, whether it is individual or collective choice, the very working out of the consequences of a choice changes the data (or original choice parameters) when the process is open-ended. Robbins' 'scarce means' are transformable. The essential spirit of Souter's argument on this point is that Robbins is unable to entertain alternative conceptions of economising that are not founded on atoms moving like particles in a closed, clockwork-like, determinate system. A defining characteristic of the alternative conception in Souter's mind is the recognition of indeterminacy and uncertainty in economic processes.¹

4.4 *Mathematical form versus content*

Souter's review refers to the 'mathematical school' of economics (presumably the growth of economists utilising Walrasian simultaneous equation methods) (Souter, 1933A, pp. 394, 395). He asserts that the school is implicitly supported by Robbins' definition of economic science since it incorporated the logic-of-choice. In analysing market interdependencies the derivation of demand and supply equations takes for granted underlying economising behaviour on the part of consumers and producers, respectively. There is 'complete mutual determination' in the mathematical system representing the generic economic structure of a market economy. This school of 'pure formalists' assumes that all relevant data are constant for economists on the demand side (tastes, technology, etc.) in order to render the system determinate. One-off exogenous changes (in tastes, technology, etc.) are accommodated insofar as these are allowed to work themselves through the system of mutual determination without altering its fundamental generic structure (Souter, 1933A, p. 397). Yet these 'long period or general equilibrium functions' are in fact

¹ Evident here is the indirect influence on Souter of a pattern of thought widely canvassed in contemporary physics and originally due to Werner Heisenberg. At points in Souter (1933A, p. 383 n. 1, 395 n. 6), there is reference to Eddington (1929) in which the 'Principle of Indeterminacy' (pp. 220–3) is expounded. Heisenberg's principle stated that a particle may have position or velocity but not both. It implied that an observer can influence position and velocity so it is impossible to *determine* both particle position and velocity at once. Precise predictions of position and velocity are therefore impossible. On the neglect of Heisenbergian uncertainty in economics see Thomas Weisskopf (1979).

‘dependent upon social-psychological analysis’ on the demand side and on ‘sociological and technological analysis’ on the supply side. Robbins attempted to sideline these so-called ‘non-economic’ investigations. The ‘mathematical school’ wedded to ‘sheer formalism’ followed suit (Souter, 1933A, p. 397 n8). That such non-economic investigations must support and preserve the determinateness and predictions of the entire general equilibrium structure effectively renders them redundant, if not empty. Mathematical form triumphs over content. Furthermore, casting economic theory in mathematical form obviates the necessity for explaining economising behaviour ‘in the actual economic world’ (p. 397). For Souter, the beguiling element in the employment of mathematical methods was the subordination of realism in the search for ‘certain’ abstract, formal representations.

4.5 *Positive versus normative economics*

For Robbins the logic-of-choice provided generalisations about economic behaviour entirely in the abstract. That such generalisations were potentially normative had not occurred to him. Anticipating later developments in the theory of decision-making under conditions of scarcity and uncertainty, Souter made the following claim:

Formal logic . . . is a ‘normative’ science when considered in contradistinction from ‘the psychology of reasoning’ that merely investigates how we are acting. From this standpoint, logic tells how we ‘ought’ to reason . . . as against how we do (Souter, 1933A, p. 402).

This passage summarises the difference to emerge later in twentieth-century economics between proponents of universal optimisation and unbounded rationality (e.g. Milton Friedman, 1953, ch. 1) and those preferring behavioural assumptions originally promoted by Herbert Simon (1987) as ‘bounded rationality’. Paralleling these developments was the recognition that normative approaches to decision-making (e.g. optimisation models based on subjective expected utility) were in fact *normative* as opposed to descriptively accurate accounts of economising based on bounded rationality (Laville, 2000B). While Souter agreed with Robbins that positive economics need not delve into the choice-makers’ ends or cast judgement on the ethical aspect of those ends, he departs from Robbins in maintaining that the logic-of-choice is a normative scheme. A normative economic *science* is therefore possible and acceptable for Souter.

Robbins’ positive-normative dichotomy was too limiting. For Souter (1933A, p. 403), the discipline of economics offers a ‘hierarchy of levels of discourse’, all of which contain normative elements though none of these are concerned with ‘philosophical ethics’ as such.¹ When economists employ ‘an already developed abstract conception of the ethical end (let us say “maximum net social satisfaction”)’ they may confine themselves to an investigation of the logical implications of that end or to conditions under which that end is in fact realised in a concrete situation. At this level of discourse, economics would be superficially ‘normative’; it would study how an economy ‘ought to work, as distinct from a study of how it does work’. Yet it would still be ‘scientific’ for it would not be concerned

¹ According to Souter, philosophical ethics formulates ‘the rational implications of the concept of an ethical end, and so discover its content’ (Souter, 1933A, p. 402 n. 3).

with ethics proper.¹ Failure to distinguish between normative and ethical questions, and denying all normative economics the status of 'economic science' could only be the result of an erroneous supposition that normative economics must be concerned with the actual content of ethical valuations and obligations (Souter, 1933A, pp. 401–2).

To be sure, the logic-of-choice as a representation of economising behaviour appears as 'mere abstraction' (p. 404). Abstraction yields useful heuristic devices for economic theorising. However, the matter is more complex than Robbins allows. More usually the abstraction is formulated in terms of the metaphor of a mechanism that is regarded as a useful guide to the right, proper or correct resource-allocative decision procedure. The choice mechanism assumes 'absence of "error"'; it therefore imposes 'intolerable and insuperable complications of calculation' on the individual decision-maker (p. 401, n2). Collapsing the core of economic science and locating its significance in the formal logic-of-choice carries with it 'logical inferences as to the necessary implications of . . . judgements' based on the decision-maker's ability and valuations (p. 408). Souter's complaints are substantially equivalent to modern literature, which suggests abandoning optimisation theory altogether (e.g. Laville, 2000A, 2000B).

5. Contemporary reactions to Souter's review

Robbins attributed many of Souter's objections to the first edition of *Nature and Significance* (1932) to 'misunderstandings' (Robbins, 1935, p. xxxix). Robbins does not answer very many of the objections we have explored in the foregoing section. In appealing to the very authority of 'eminent scientists' to whom Souter (1933A, 1933B) refers, Robbins asserts that these scientists would not share Souter's 'very low opinion of the methods of mathematical economics' (1935, p. xxxix). No attempt is made to address Souter's elaboration of the consequences and ontological implications arising from the wholesale adoption of mathematical methods in economics.

In the second edition of *Nature and Significance* (1935) Robbins considered only one substantive point raised by Souter, namely, the meaning of stationary equilibrium and the functions of stationary equilibrium analysis in economics. For Robbins (1935, p. 100) stationary equilibrium refers not to 'conditions of complete rest . . . but conditions in which the various "flows" of activity exhibit no tendency to change, or change only in a recurrent cycle'. He proceeds to argue for the usefulness of such a concept in standard price theory and as an adjunct to the demand–supply curve apparatus. When extended to the comparison of different equilibrium positions as in 'comparative statics', the procedure can encompass the study of changes in the flows of economic activity. The path of such changes can be traced from one equilibrium state to the next (pp. 101–2). Time is indeed incorporated but is treated as a mere technical parameter. This is in fact 'dynamic' economic analysis on Robbins' understanding and it was consistent with his interpretation of Marshall's well-known period analysis.

Was it the case that Souter had simply been guilty of a 'misapprehension' (Robbins, 1935, p. 100 n. 1) when interpreting Robbins's equilibrium concept? On this matter Souter, from the very outset, emphasises the Marshallian pedigree of his analysis. Robbins's notion of stationary equilibrium did not reflect Marshall's idea. Any identifiable

¹ Souter (1939) gives a splendid example of this kind of discourse. Souter maintained that Pigou's *Economics of Welfare* was another example. And 'the prestige of *economic science* . . . would be improved . . . if the broad essentials of Pigou's [book] could become a part of the accepted intellectual furniture' (p.9 n. 1, bracketed inserts and italics added).

stationary equilibrium in a standard demand–supply framework possesses a dynamic element; the equilibrium position represents a balance of forces—‘one in which the dynamic forces at work are equal and opposite’. Souter reserves the term ‘static’ for analysis that eliminates ‘all possible causes of change . . . by hypothesis’ and this, in his opinion, is something that Marshall generally does not do (Souter, 1933B, pp. 23, n22, 28, 29). Using copious quotations from Marshall’s *Principles*, Souter illustrates his point: Marshall’s price theory implicitly contains three dimensions—an ‘economic price–quantity–time *continuum*’ (Souter, 1933A, p. 399, his italics). The time factor underlies Marshall’s concept of equilibrium; that ‘dynamic’ element is completely separate from the one-at-a-time comparative static method that is also made available by Marshall to study a discrete series of changes in equilibrium positions. Souter proposes that

attempts in economics to eliminate Time from ‘statics’, and to visualize the economic world as a two-dimensional abstraction of time-less demand and supply curves ‘leaping from instant to instant through time’ involves an . . . inherent confusion (Souter, 1933A, p. 31).

Marshall, it is maintained, did not set aside the study of forces responsible for change even while prosecuting equilibrium analysis. To repeat: equilibrium was a situation ‘in which the dynamic forces are equal and opposite’ (Souter, 1933B, p. 23 n. 22). In other words, those forces are not assumed to be inoperative; they are finely balanced. Thus, Souter believed he was following Marshall in not wanting to remove the potential for change ‘even for an instant’ (Souter, 1933B, p. 23 n. 22, quoting Marshall). Conditions of recurrent stationariness are acknowledged as a possibility but these were highly provisional depending upon the precise variables the economist chose to hold constant.¹

Robbins’ (1935, p. 102 n. 2) view was that the function of equilibrium analysis in economics was to produce a purely ‘theoretical instrument’. Souter raised several interrelated objections. First, Marshall had not generally envisioned that the equilibrium concept be used to study a stationary state as a determinate system.² Instead, stationary equilibrium analysis was only useful and important if it could be applied to the ‘ordinary business of life’ (to use Marshall’s oft-quoted phrase); it was not purely imaginary or a mere mental experiment. Second, the Marshallian demand–supply apparatus must be regarded as embodying an ‘irreversible’ element (Souter, 1933B, p. 29). The equilibrium state was pregnant with ongoing dynamic forces provisionally (and often temporarily) in balance. Nothing meaningful could be deduced from demand and supply schedules without recognising that economists had constructed them; their content was ‘*relative to the standpoint . . . of the scientific observer*’ (Souter, 1933B, p. 21 his italics). The observer possesses a ‘frame of reference’ in space and time (p. 21) when using equilibrium theorising, and is thereby making a statement about an aspect of the real economy that is being explained and understood. Souter (1933B, 90 n.) pointedly juxtaposes statements by Marshall and Robbins on this point. Thus, Marshall (1920, p. 369): ‘we fix our minds on some central point: we suppose it for the time being to be reduced to a *stationary* state; and then we study in relation to it the forces that affect the things by which it is surrounded, and any tendency there may be to equilibrium of these forces’. And Robbins (1930, p. 194): ‘We abstract from various causes of change, and conceive the remaining economic quantities as stationary,

¹ According to Souter: ‘Hypothetical stationary equilibrium, if conceived in terms even remotely “realistic” is *not an instantaneous* condition but a round or cycle of activities which is identically repeated’ (Souter, 1933B, p. 11, his italics).

² There is evidence, however, that Marshall vacillated on this point; see Murray Milgate (1987, p. 180).

and inquire as to their mutual relations'. These passages are striking illustrations that indicate how the focus of analytical attention differed fundamentally in each case: in Marshall, study of the balance of 'forces' that can cause change is central; in Robbins, the economist is interested in the logical relations between stationary economic quantities.

Third, shifts in stationary equilibrium were to be conceived, in Souter's version of Marshallian analysis, as an '*actual* historical sequence' (Souter, 1933B, p. 25 his italics). The irreversibility inherent in the long period supply curve is not a theoretical nicety; it turns on questions of 'fact'.¹ Increasing returns could be admitted where long period supply *and* long period demand schedules were constructed. A necessary assumption to keep the continuing 'stationary' equilibrium in place would be a corresponding shift in demand (p. 27). Moreover, 'cycles' of stationary equilibrium were conceivable and must be set in 'time'. These cycles of equilibrium in Souter's sense may well occur in conditions of large-scale unemployment and resource underutilisation (Souter, 1933B, pp. 12–13).

When Souter interprets Marshall's notion of equilibrium as a balance of 'equal and opposite forces' he leaves room for endogenous change. In this view the appropriate supporting analogies are biological, not mechanical (Souter, 1933B, p. 38). In Souter's terminology equilibrium incorporates 'a qualitative, or organic, or emergent element' (p. 44, n47)—an element entirely consistent with Marshall's essay on 'Mechanical and biological analogies in economics' (Marshall, 1925, p. 415) in which it is argued that the forces 'in balance' are not 'mechanical'; they are 'organic forces of progress and decay' (Souter, 1933B, pp. 10, 19). Indubitably, from Souter's perspective Robbins (1935, 102 n. 2) misses the import of these insights when, in reply to Souter, he rejects the charge of studying equilibrium as an 'end in itself' and of regarding 'dynamic investigations' as superfluous. Furthermore, according to Robbins, 'the *raison d'être* of static investigation is the exploration of dynamic change [though] ... if we are to proceed to these dynamic investigations, we shall do so the better equipped if we are fully aware of all the implications of full stationary equilibrium' (Robbins, 1935, p. 102 n. 2). In fact Robbins relegates the study of the kind of change Souter wished to incorporate into economic analysis to the sub discipline of economic history. The latter was concerned with ongoing shifts in the parameters of price theory: economic history is essentially the 'explanation of the historical manifestations of "scarcity"' (Robbins, 1935, p. 38).

In modern terms Souter was reacting against the early use of equilibrium theorising as a means for ensuring determinateness in formal models—a point that has been recently prosecuted in another context by Lawson (2005) and Lang and Setterfield (2007). 'Equilibrium' has been given two often conflated meanings: (i) it refers to, and is concerned with the formal study of the 'mutual relations' (to use Robbins' phrase) 'used to describe the economic system' and (ii) it refers to, and informs the study of the 'balance of forces' considered as an 'aspect of the economy' that the economist aims to understand (Lawson 2005, p. 431). Lawson's parallel distinction between the 'theoretic' and 'ontic' interests of economic theorists brings into sharper focus Souter's objection to the purely theoretic approach to equilibrium analysis. The term 'theoretic' denotes 'the quality of being a feature of a model'. The term 'ontic' denotes 'the quality of being features of the world the economist presumes to illuminate' (Lawson, 2005, p. 429). Souter's ontological outlook drove him to resist the idea, then being popularised by Robbins, that stationary

¹ Souter (1933B, p. 29 n.). Joseph Schumpeter (1954, p. 995 n. 9) believed he was stating something new when he wrote that Marshall's long run supply curve depicts 'historical processes in a generalised form' as opposed to functioning as a purely theoretical or analytical construction.

equilibrium could be represented by a system of equations of demand and supply with analysts being preoccupied with a solution to those equations. Further, his ontology led him to reject the idea that the subject matter of economics, when represented by a notion of economic equilibrium, must require the economist to treat the economy as ‘a machine, which has somehow “gone wrong” or contains some specific . . . flaw’ (Souter, 1933B, p. 164). In summary, Souter is not objecting to economists’ using the equilibrium metaphor or associated abstractions. It is the nature and content of the abstraction that mattered. He claims Marshall’s authority and Marshallian pedigree in recommending that equilibrium theorising be concerned with the interaction of dynamic forces (‘of progress and decay’); such theorising must include reference to irreversibility, historical time and the potential for endogenous change.¹

We turn next to Talcott Parsons’ (1934) commentary on Souter’s review of Robbins’ *Essay*. Souter’s criticisms of the logic-of-choice framework are supported. Parsons (1934, p. 515) adds that Robbins cast the economiser in a situation wherein ‘all the elements affecting . . . action are conceived as simultaneously given on the same plane’. Souter would have concurred given his perspective on Marshall. Marshall’s sketch of the static consumer’s optimising procedure in the *Principles* did not constitute the core of Marshallian choice theory. Marshall’s analysis of optimising is tentative and preliminary; it was not pressed to its formal mathematical limits because he was impatient to investigate long period demand. In the long period, the growth of wants, changes in the character of the consumer, and ‘changes in the quality of mental states’ in the *process* of economising were central ideas (Egidi and Rizzello, 2006; Endres, 1991B; Marshall, 1920, p. 16). Souter (1933B, 29 n., pp. 47–9) believed there was a gap in Marshall’s *Principles*: it pertained to the absence of a discussion on the ‘irreversible’ long period demand schedule embodying a ‘law of increasing utility’.² Thus, the ‘expanding economic universe’—a metaphor used in the subtitle of Souter’s (1933B) book—could be represented in economic analysis by long period supply and demand curves.

Parsons (1934, p. 541) praises Souter for underscoring the neglect of ‘the element of time’ in Robbins’ *Essay*. That ‘internal adjustments of an economic system will react on the data of the system’ is one important factor. Another factor to be accounted for is the establishment of key non-economic causes of endogenous change. Souter restricts his study to the operation of dynamic economic forces which, when unequal and opposed, will generate change. As against Robbins, Parsons suggests that Souter could have emphasised the ‘unity of man’s social life’ and moved completely away from Robbins’ purely hypothetical economic society. As well, Souter and other economists, including Marshall, stand charged by Parsons with neglect of coercive power in the logic-of-choice framework. Presumably they considered the analysis of power relations to be part of the domain of sociology.

Like Marshall, Souter employed the terms ‘organic’, ‘biological’ and ‘evolutionary’ rather loosely (Parsons, 1934, p. 545). Frank Knight (1934, p. 225) ridicules not only these ‘catchwords’; he alleges that Souter (1933B) reduces to ‘a defense of Marshall as a kind of

¹ Souter’s ‘Marshallian’ conception of equilibrium is also evident in his commentaries on the work of Schumpeter (1928) and Kuznets (1930); he correctly linked these contributions with equilibrium theorising in the Walrasian tradition; see Souter (1930A, 1930B).

² Parsons (1934, p. 532) maintains, with some justification, that Souter’s suggested ‘law of increasing utility’ failed to appreciate the underlying rationale for Marshall’s work on the expansion of human wants and on the subject of economic activities, which was undertaken on ‘an entirely different plane from that of his “utility” theory’; see also Endres (1991B, pp. 336–9).

hero-saint'. Knight trenchantly defends traditional price theory against Souter's purportedly vague, imprecisely formulated criticisms. Robbins is correct, in Knight's view, to state the core of economics as the study of allocative behaviour that underwrites all traditional demand–supply analysis. That Souter's notion of emergent change has a place in equilibrium theorising is dismissed as a violation of 'given conditions of an economic system' assumed in standard theory. The term economic dynamics must be restricted to 'the process of establishing equilibrium under *given* conditions' (Knight, 1934, p. 230, his italics). In other words, contrary to Souter's presentation, the 'given' conditions do not react upon each other and equilibrium is always to be conceived as a state of rest. The more general idea of equilibrium as a balance of equal and opposite forces (of 'life and decay') is not recognised in Knight's commentary. Instead he reinforces the Robbinsian idea that dynamic analysis is concerned with comparative statics.¹ For Knight, the notion of equilibrium is entirely fictional and instrumental.

For all Knight's disapproval of Souter's contribution, there is nevertheless a grudging acceptance that the use of 'biological analogy . . . opens the way to admit a somewhat larger scope of reality into economic theory' (Knight, 1934, p. 236). Precisely. Souter's brief in this connection was to be 'authentically Marshallian' (Souter, 1933B, p. 92). Despite ambiguities and incompleteness in respect of Marshall's 'evolutionary' theorising, Souter understood the gains for realism in attempting to assimilate (rather imperfectly as well) biological metaphors in both choice theory and demand–supply analysis. Cognate ideas of path dependence and irreversibility are also incorporated into his discussion, which relentlessly pursues the belief that demand and supply curves may ultimately be used to study 'organic economic evolution' (Souter, 1933B, p. 28).

6. Souter and modern, Marshall-inspired evolutionary perspectives

Souter published very little after his book in 1933. In his last journal article he reiterated a long-held conviction that Marshall's long period supply curve was the point of departure for those economists wanting to develop a discipline based on economic biology and a correspondingly relevant economic philosophy. As we know, Marshall was not able to pursue some of the programmatic suggestions on biological and evolutionary themes in the promised second volume of the *Principles* (Whitaker, 1990). We also know that Marshall flirted with Hegel's ideas and this may explain some of the hints of 'organic' economic development in his work. As we saw in Section 2, Souter was influenced by Hegelian philosophy early in his intellectual journey and this influence likely gave rise to his special reading of Marshall's *Principles*. However, mere utterances by Marshall that have biological connotations, and mere use of biological metaphors, do 'not necessarily imply an organicist ontology, in which relations between entities are internal rather than external' (Hodgson, 1993, p. 408). Marshall failed to instigate a branch of fundamental research utilising his biological insights at least up until the resurgence of interest in his 'evolutionary economics' in the late twentieth century (Raffaelli, 2003). Souter stood out as a rare interpreter and successor of Marshall who followed an inchoate stream of thought almost completely neglected by other Marshallians.² Souter was one of a small 'number of mavericks' Hodgson

¹ Knight's claim that 'Souter's analysis shows a failure to understand Marshall's method of one relation at a time, or "*ceteris paribus*"' (Knight, 1934, p. 234) cannot be sustained. Souter understood the technique though he believed Marshall wished to move beyond it to a more genuinely dynamic analysis. For some textual evidence from Marshall's *Principles* on this very point see Lang and Setterfield (2007, p. 202).

² Gerald Shove was a contemporary exception for whom Souter had considerable admiration (see Shove, 1942).

(1993, p. 413) was possibly referring to who bemoaned the ontology adopted in the popular, mechanistic applications of Marshallian economics in the mid-twentieth century.

Perhaps, in this connection, Souter made too much of Marshall's long-period analysis, especially Appendix H of the *Principles*? After absorbing all the criticisms of his work, in particular of his reaction to Robbins's *Essay*, Souter (1939, p. 10 n. 2) remained adamant that

Long period curves of demand and supply ... are characteristically imperfectly reversible in both directions, and adjustments along them normally involve qualitative, structural, organic change—in the 'character of tastes' of consumers, and in the structure and function of industries.

Marshall's Appendix H lent itself to wide-ranging interpretation. Souter (1933B, p. 90) perceived in Marshall's discussion an embryonic approach to the study of 'a continuous process of growth and change'. The preferred recourse to use biological analogies and employ 'organic categories' rather than mechanical and atomistic conceptions of the subject matter of economics anticipates many aspects of modern evolutionary economics.¹ Some modern, self-proclaimed evolutionary economists accord much weight to aspects of Marshall's work that definitely possess an evolutionary flavour (e.g. Foster, 1993, 1997; Metcalfe, 1988, 2006). Souter was able only to appreciate one side of what Stanley Metcalfe (2006, p. 651) has called the 'two evolutionary Marshalls':

- (i) Marshall's Book IV, which concentrates on ideas of 'organic development' as an explanation for economic change and
- (ii) Marshall's Book V, which emphasises the 'adaptive, variation, selection view of industrial competition and development'.

Hence, in respect of (i) above, Souter's apprehension of economic life as if it were an 'organism' and the economist's prime role in his view was to conceive of the economy as a 'living, self-developing system' using Marshall's *Principles* as a handbook (1933B, 36 n.). His precise words parallel Metcalfe's: Souter aimed to show the 'superiority of the biological, organic or developmental conception of the science' of economics over other approaches (1933B, p. 100). Likewise, John Foster (1997, 2000, p. 324) notices in Marshall's work various insights compatible with a 'self-organization approach' to economic problems popular with modern evolutionary economists.

Naturally, in taking up Marshall's 'evolutionary' reasoning Souter would find severe limitations in the contemporary fashion to reduce Marshall's economics into a 'two-dimensional' game for 'amateur geometers' (1933B, p. 128). That game would be conducted as a form of comparative statics; it would strip Marshall's message of all biological analogies. In principle, economic analysis should not reduce to a formal science of implications. Economics should be a science of the 'expanding economic universe' to use Souter's phrase. In practice, Souter's economic science (as opposed to that recommended by Robbins) would make its primary objective the explanation of economic progress *viz* the

¹ Souter (1930A, p. 61) uses the term 'evolutionary economics' to describe Marshall's work; see also Souter (1930B, p. 37, 1933B, pp. 139, 153). As far as we can ascertain, this is the first use of this term in connection with Marshall's work and also the first use of the term in the general literature of economics. Of course Veblen (1898) uses the term 'evolutionary science'.

growth of knowledge, improvement in organisation and development of the human character. Furthermore it would embody both positive and normative elements.¹

Like Marshall, Souter possessed an intuitive understanding of one way of appreciating the equilibrating process in markets, which modern evolutionary economists have called 'homeostasis' (e.g. Foster, 1993, p. 980).² Marshall placed much importance on the passage of historical time and accompanying irreversibilities. The method of comparative statics was not suited to studying irreversibilities. For Souter the comparative static analysis in Marshall was *not* a central theme—it played a cameo role. In repeating this point when reviewing Robbins's *Essay* he berated Robbins for using the term 'dynamic' in connection with comparative static price theory. The precise quantum of a variable may be deducible as part of a set of homeostatic equilibrium relations; these relations need have no direct contact with history or real cases. The only formal requirement was that their posited stable structure must return the system to the *status quo*. In addition, as Souter (1933B, 29 n.) explains (without using the term homeostasis) a stable equilibrium 'in the Marshallian sense' is one in which 'the dynamic forces which operate *within* it produce changes which are equal and opposite' (italics added). The main issue however, was empirical: whether or not 'these changes, after they have occurred, are in fact capable of being completely reversed' (p. 29 n.). The idea that a real 'dynamic' market or economic system could simply retrace itself after a disturbance was not seriously entertained. Thus, in his vision of the historical economic process, '*all curves of both demand and supply are irreversible*' (p. 29 n., his italics). As we explained earlier, this outlook was attributable to his conception of time.

In the organic, developmental view of market processes any equilibrium of long run demand–supply values was transitory. Moreover, transitory equilibrium was enhanced by interdependencies between demand and supply as outlined in Marshall's Book IV (Metcalfe, 2006, p. 656). These interdependencies were not analytically tractable. Gerald Shove (1933, p. 124) expressed the problem as follows:

If economic theory is to be brought closer to the actual conditions which it sets out to explain, it must, in one way or another, develop an apparatus which displays and can handle the dependence of cost upon the character of the market and the closely connected phenomenon that 'demand' is not simply a *datum* to which the producers adjust themselves, but, in large measure, created and moulded by them.

Souter (1933B, pp. 85, 145) wrote in praise of Shove's faithful rendition of this analytical problem evident in Book IV. One implication, allowing for enduring imperfections in competition even in the long run, was that long period supply schedules were not simply functions of price. Indeed the 'shape of a "given" supply curve depends on assumptions regarding not only demand price, but also the "structure" of demand' (p. 85). Realistic assumptions about the structure of demand would, for example, incorporate producers' influence on consumer tastes and the duration of demand: 'demand periods of various lengths' (p. 84). Contrariwise, long period demand curves were inextricably linked to realistic developments in the structure of supply (pp. 88–9). Therefore, in short, demand–supply interdependencies imply insufficient determinateness in the Marshallian system of demand and supply.

¹ The normative element is nicely encapsulated in the title of Souter's last journal article: 'How do we want the New Zealand Economy to Behave?' (1939, p. 7).

² Homeostasis concerns the maintenance of a dynamically stable state within a system by means of processes that counteract any exogenous disturbances. For an economic system this means that the economy or market will return to the original state (which obtained before the temporary disturbance); see Kenneth Arrow (1988).

Marshall's demand–supply schedule representations are notoriously difficult to reconcile with his long run supply curve discussion in Appendix H and with his theory of historical processes and organic change constructed in Book IV. Souter attempted reconciliation without much success. In more recent, substantial doctrinal studies it has become standard practice to express disappointment over Marshall's schedules and the associated comparative static analysis, which seem inherently unsuited to communicating Marshall's core ideas on all the manifestations of economic change (Dardi, 2006, p. 224; Raffaelli, 2003, p. 85).¹ That Souter knew there was an evolutionary scheme concealed in Marshall's economics, that it deserved elaboration and further refinement, makes him an important precursor to those modern economists taking a similar view of Marshall's contribution. In the most comprehensive study in this tradition so far, Tiziano Raffaelli (2003, p. 139) concluded that Marshall's evolutionary perspective 'opened up new routes of investigation that were lost to his successors'. Furthermore, the majority of Marshall's successors in the twentieth century neglected the organic, developmental approach 'because of the difficulties in casting it in a definite form' (Metcalfe, 2006, p. 656). Souter followed the line of maximum resistance in making this aspect of Marshall's work central to his interpretation. Like Marshall the intention was to provide a realistic expression of the subject matter of economics ('economic life') without over-reliance on formal models and mechanical analogies. Souter would certainly have taken issue with the suggestion that the organic, developmental line of thought in Marshall was all a matter of 'promise' and not 'substance' (Thomas, 1991, p. 11). For Souter, it was all about ontology, in short, a desire to introduce a fundamental view of the subject matter more appropriate to the study of economic life.

7. Conclusion

While readers of Souter's work have often dismissed his contribution because it was convoluted, turgid and 'filled with jargon' (to repeat Friedman's remark), this paper has attempted to investigate its substantive content. Souter's project in the 1930s offered a highly unconventional interpretation of Marshall's *Principles* that had evolutionary and heterodox foundations. Going by many entries in Raffaelli *et al.* (2006) the general tenor of Souter's interpretation seems no longer so unconventional. It was an interpretation of Marshall used to defend the discipline against Robbins' attempt to demonstrate the logical independence of economic analysis from the broader social, psychological and historical matrix in which real economising activity takes place. Souter drew on his early training in philosophy, the history and philosophy of physics and study of Marshall's work. He developed particular aspects of Marshall's economics. Souter demonstrated how Robbins used time as a technical parameter, held a bias toward atomistic representations of the economic agent and assumed that optimisation was the only legitimate model of the economic agent's behaviour. Souter also perceived in Robbins' *Essay* an exceedingly circumscribed definition of economic science and implicit support for the incipient trend toward mathematical 'formalism' in the 1930s, that was, according to Blaug (2003), fully to emerge in the 1950s.

The Robbinsian objective was to define economic science in terms of a set of purely formal, logical relations. Souter illustrated this point by explaining how the concept of

¹ For example, according to Marco Dardi (2006, p. 223) 'the planar geometry of supply and demand curves was inadequate enough to justify those who consider it to represent the biggest failure in Marshall's communicative strategy'; see also Dardi (2003).

equilibrium in Robbins departed significantly from Marshall's concept. Marshall's concept of the 'balance of forces' draws attention to the inherently biological 'forces of progress and decay' that have the potential to change an imagined stationary situation; by contrast, Robbins supposed (along with Knight, Schumpeter and Kuznets) that the equilibrium theorist must abstract completely from these forces of change and model the logical relations between demand and supply. This approach would seem consistent with Marshall's comparative static technique. Once Souter turns to what he calls Marshall's 'evolutionary economics' he confirms that the equilibrium concept in Marshall's *Principles* incorporates, in a theoretically incomplete manner, the potential for organic or endogenous change. Marshall's price theory was three-dimensional; time was a critical element. Yet Marshall's long run analysis in Appendix H required a long period demand curve to complete the endogenous change story.

Souter's elaboration of the evolutionary elements in Marshall's work proceeded with the assistance of biological metaphors and the overarching notion of an 'expanding economic universe'. He demonstrated that the starting point for further development in Marshallian evolutionary economics must be the selection of appropriate metaphors. These would not gainsay the 'modelling' of, for instance, economising behaviour; but such modelling must capture, among other things, the expansion of human wants and their realisation. The aggregative consequences of want expansion must accordingly be modelled in a long period analysis that accounted fully for endogenous industrial innovation. Souter substituted the expanding universe for a mechanical or machine-like universe wherein events are predictable consequences of a logical relationship between atoms allocating given scarce means among competing ends or (alternatively stated), between the parameters of a demand–supply model in which historical time is held in abeyance.

There is much more in Souter's defence of Marshall's 'masterpiece' than we can relate in this brief conclusion. His priority in the use of such terms as 'economic imperialism', 'economic formalism' and 'evolutionary economics' deserve further investigation especially because they seemed to have been formulated in conjunction with a close reading of Marshall. Altogether his project may also be understood as a challenge to the implicit subordination of realism in Robbins' scheme. Finally, Souter must be counted as an important forerunner to certain developments in modern evolutionary economics that have used Marshall's ideas as points of departure.

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