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Ramsey and Keynes … and Sraffa and Wittgenstein: Change in Interwar Cambridge economics and philosophy

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Abstract: The Ramsey-Keynes exchange regarding the nature of probability is investigated in connection with the development of interwar Cambridge economics and Ramsey and Sraffa's influences on Keynes and Wittgenstein. First discussed are Ramsey's criticisms of Keynes and Wittgenstein; then Sraffa's criticisms of Marshall and Wittgenstein. Ramsey was influenced by Peirce and pragmatism and Sraffa by Gramsci and the theory of cultural hegemony. Ramsey died in 1930 but Sraffa continued to interact with both Keynes and Wittgenstein. After his critique of Marshall he participated in the 'Cambridge circus' and turned to recovering the Classical economics of Ricardo. Keynes's *General Theory* statement of what the essence of his theory was and Wittgenstein's *Philosophical Investigations* distinction between rules of language and language-games both parallel Sraffa's Classical outside forces operating in the economic field argument and Gramsci's state power and non-state institutions view. Keynes and Wittgenstein determined the nature of interwar Cambridge economics and philosophy. Ramsey and Sraffa were instigators of this change.

Keywords: Ramsey, Keynes, Sraffa, Wittgenstein, Peirce, Gramsci, *General Theory*, *Philosophical Investigations*

JEL codes: A12, B20, B30, B40

1. Interwar Cambridge economics and philosophy

There is much scholarly discussion of the Ramsey-Keynes exchange regarding the nature of probability, particularly with respect to how it may have influenced Keynes's later thinking. This chapter takes this exchange as its entry point, but then goes on to show how it occurred in a wider context connected to Ramsey's influence on Wittgenstein, and then also to the influence of Sraffa on Keynes and Wittgenstein. The rationale for this larger canvas is that not only were Ramsey and Sraffa's critiques of Keynes and Wittgenstein intertwined, but understanding them depends on understanding their different conceptual foundations, Ramsey in Peirce and Sraffa in Gramsci. The goal of the chapter is thus to explain the change in interwar Cambridge economics and philosophy on the basis of the interactions between these individuals.

The chapter proceeds chronologically, examining the interactions between these individuals mostly in the order they occurred. It also moves back and forth between economics and philosophy both in terms of the individuals involved and in terms of the scholars who have discussed them. It first discusses the Ramsey-Keynes exchange in which Ramsey criticized Keynes's theory of probability on philosophical grounds and Keynes later, when then fully engaged in economics, responded – an exchange for which the recent scholarly literature has mostly been from economists. The chapter then moves to the Ramsey-Wittgenstein interaction that occurred around the same time in which Ramsey criticized Wittgenstein's early logical atomist theory of meaning – an exchange for which the scholarly literature is mostly from philosophers. This latter exchange suggests that Ramsey's criticism of Keynes's logical theory of probability and criticisms of Wittgenstein's logical atomism were connected. This argument has recently been made by two economists drawing on philosophers' understanding of the Ramsey-Wittgenstein interaction.

Having widened our canvas to include Wittgenstein, the chapter then turns to the interactions of Sraffa, an economist, with both Keynes and Wittgenstein – the Keynes interaction having received attention only from economists and the Wittgenstein interaction from philosophers and economists. Why Sraffa? In the preface to his later *Philosophical Investigations* Wittgenstein credits both Ramsey and Sraffa for the change on his ideas. Further, when Sraffa moved to Cambridge in 1927 he influentially criticized the Marshallian foundations of Keynes's thinking. Also, when Wittgenstein returned to Cambridge in 1929, there were extensive interactions between Ramsey, Sraffa, and Wittgenstein until Ramsey's death in 1930 in which Ramsey and Sraffa both criticized Wittgenstein's early thinking.

What we see, then, are intertwined interactions between the four individuals centered around criticisms of the early thinking of Keynes and Wittgenstein. Several things can be said. First, Keynes and Wittgenstein, who seem to have had little intellectual interaction, and who became the dominant figures in their respective domains in Cambridge, appear to have been mostly on the receiving ends of the effects of these interactions that were critical of the logical approaches they had adopted in their early works. Second, Ramsey and Sraffa, who were both esteemed by both Keynes and Wittgenstein and were their critics, acted more as instigators of the change in Keynes and Wittgenstein's thinking. Third, the philosophical influences on Ramsey and Sraffa themselves were quite different – for Ramsey, especially Charles Peirce, and for Sraffa, especially Antonio Gramsci. The two were also quite different sorts of individuals. Ramsey was a product of Cambridge, critical of Victorian culture and mores, and an active, self-described socialist (Marouzi, 2025, this volume). Sraffa was deeply involved in left and Marxist Italian politics. Thus, they played quite different roles in changing interwar Cambridge economics and philosophy (Naldi, 2000).

Section 2 begins with Ramsey's criticisms of Keynes. Section 3 discusses Ramsey's criticisms of Wittgenstein. Putting these together, section 4 discusses Ramsey's criticisms of Keynes again in light of his criticisms of Wittgenstein. The chapter then follows a parallel sequence for Sraffa. Section 5 discusses his criticisms of Keynes's Marshallianism. Section 6 discusses Sraffa's criticisms of Wittgenstein. Putting them together, section 7 discusses Sraffa's influence on the later Keynes in light of his criticisms of Wittgenstein.

Left unaddressed is the short period of interaction between Ramsey and Sraffa about which there is little evidence. Section 8 nonetheless discusses their similarities and dissimilarities in terms of their different origins and different influences on Wittgenstein. Finally, section 9 returns to the chapter's point of entry, Ramsey and Keynes, and argues that explaining this needs to not only incorporate the interactions of all four individuals but also the central place in this of Ramsey and Sraffa's interactions with Wittgenstein.

2. Ramsey and Keynes

Ramsey published a criticism of Keynes's *Treatise on Probability* (1921) and logical theory of probability in 1922. In 1926 Ramsey wrote his "Truth and Probability" which further criticized Keynes's theory and advanced his own subjectivist theory of probability in which probabilities represent individuals' different degrees of belief determined using a betting-quotient method.

> But let us now return to a more fundamental criticism of Mr. Keynes 'views, which is the obvious one that there really do not seem to be any such things as the probability relations he describes. He supposes that, at any rate in certain cases, they can be perceived; but speaking for myself I feel confident that this is not true. I do not perceive them, and if I am to be persuaded that they exist it must be by argument; moreover, I shrewdly suspect that others do not perceive them either, because they are able to come to so very little agreement as to which of them relates any two given propositions (Ramsey 1926, p. 161).

At the heart of this is Ramsey's doubt that people perceived objective probability relations and that they even existed. Here he was challenging a central tenet of the philosophy of the early intuitionist Cambridge philosophy of G.E. Moore that had been influential for Keynes and others at Cambridge at the beginning of the century (Moore, 1903; Davis, 1994). Ramsey was one among a number of philosophers who challenged this, others later including non-cognitivist philosophers of ethics Ayer (1936) and Stevenson (1937). What Ramsey did was to naturalize how people conceived of probability relationships. If they possessed some kind of objectivity, it was not in the Moorean sense but according to the reasoning people engaged in.

Though Ramsey's criticism appeared posthumously in 1931, he read part of it to the Moral Sciences Club, and so though Keynes was certainly aware of it, he only responded to it in a much discussed brief comment in his obituary of Ramsey (Keynes, 1931). His response to Ramsey is somewhat ambiguous because he agrees and disagrees with Ramsey on different grounds.

> Ramsey argues, as against the theory that I had put forward, that probability is concerned not with objective relations between propositions but (in some sense) with degrees of belief, and he succeeds in showing that the calculus of probabilities simply amounts to a set of rules for ensuring that the system of degrees of belief which we hold shall be a *consistent* system. Thus the calculus of probabilities belongs to formal logic. But the basis for our degrees of belief – or the a priori probabilities, as they used to be called – is

> part of our human outfit, perhaps given us by natural selection, analogous to our perceptions and our memories rather than to formal logic. So far I yield to Ramsey – I think he is right. But in attempting to distinguish "rational" degrees of belief from belief in general he was not yet, I think, quite successful. It is not getting to the bottom of the principle of induction merely to say that it is a useful mental habit" (Keynes 1931, p. 407).

This left Keynes and philosophy literature in the 1990s with two issues arising out of this exchange regarding how Cambridge economics and philosophy evolved in the interwar period. One concern is whether Keynes's later philosophical thinking changed; a second is whether Ramsey's critique of the logical theory caused the change in Keynes's later thinking.

The first issue has been debated regarding whether over his lifetime Keynes's philosophical thinking exhibits continuity (Carabelli, 1988; O'Donnell, 1989) or discontinuity (Bateman, 1996; Davis, 1994) from the *Treatise on Probability* to *The General Theory*. The second issue has been addressed by Misak who argues Keynes fully accepted Ramsey's critique (2016, 2020; also see Bateman 2023 and Gerrard 2023a, b), and by Zappia who argues that Keynes, while seeing the merits of Ramsey's axiomatic approach was still unconvinced that the principle of induction could be adequately explained as a "useful mental habit" and that Ramsey addressed the question of vagueness in probability theory (2025, this volume).

This latter debate puts the first in a new light. If Ramsey had a significant impact on Keynes's later philosophy, and this reflected Ramsey's pragmatist thinking, this could give new grounds for the discontinuity interpretation and make a case for saying Ramsey broadly influenced later Cambridge economics and philosophy including Keynes's later philosophy. Yet, even if Ramsey's criticism was accepted in part by Keynes, this alone does not show Keynes's later philosophy changed or was pragmatist, nor that later Cambridge philosophy was pragmatist. Clearly the key figure in what became later Cambridge philosophy was Wittgenstein, and so how his thinking changed needs to also be addressed.

The philosophy dominant at Cambridge at the beginning of the century was Bertrand Russell's analytic logical atomism, the view that the world is made up of logical 'facts' (or atoms) each of which can be grasped and understood independently (see Klement, 2020). Wittgenstein held this view in his *Tractatus Logico-Philosophicus* but explicitly abandoned it in his later *Philosophical Investigations*. Misak, then, has argued that Ramsey's pragmatist thinking caused Wittgenstein to change course, and that Ramsey's pragmatism put an end to both Wittgenstein's early thinking and Keynes's logical theory of probability, thus producing a pragmatist interwar Cambridge economics and philosophy. Misak makes the argument about Wittgenstein and Cambridge philosophy. Bateman and Gerrard make the argument about Cambridge economics. The next section discusses Misak's argument. The following returns to the Ramsey-Keynes interaction and discusses Bateman and Gerrard's arguments.

3. Ramsey and Wittgenstein

Wittgenstein was first in Cambridge from 1911 to 1913. With the approach of the war he left Cambridge for Norway where he wrote the *Tractatus* in German. Ramsey undertook the translation of it in 1922, and then visited Wittgenstein in Austria for two weeks in 1923 during which the book was discussed. He helped persuade Wittgenstein to return to Cambridge in 1929. Sraffa arrived in 1927, and on Wittgenstein's return the three had regular meetings, one subject of which was the *Tractatus* until 1930 when Ramsey died.[1]

It has long been recognized that Ramsey influenced Wittgenstein because Wittgenstein credited him as having been important to the change in his thinking in the Preface to his *Philosophical Investigations*. Ramsey was credited for "innumerable conversations" they had during which Wittgenstein came to see his earlier *Tractatus* thinking as seriously mistaken.[2]

What was it that Ramsey convinced Wittgenstein he had been mistaken about? A pragmatist current has recently been attributed to Wittgenstein's later thinking (Bakhurst and Misak, 2017), and Misak has argued this was due to Ramsey and helps explain what Wittgenstein was referring to in his Preface (Misak, 2016, ch. 7).

What the change in Wittgenstein's thinking involved was his abandonment of the *Tractatus* pursuit of certainty and clarity and a shift from his earlier "method of doing philosophy that turns its back on common ways of speaking" (Misak, 2016, 232). What Ramsey argued was there are "diverse kinds of propositions, we have no need for the atomistic structure" of the *Tractatus*, and we should "concern ourselves with human belief, rather than with the purely formal relation between thought and the world" (*Ibid.*). This kind of thinking indeed emerged for Wittgenstein after 1929.

Central to this was the theory of meaning. Wittgenstein's austere view in the Tractatus was that properly formed propositions 'pictured' facts about the world. Meaning was not something tied to how people communicated and meant things using language. Ramsey directly challenged this conception of meaning and argued it employed a mistaken view of the role of philosophy. As he put it later, philosophy must be of some use if we are to take it seriously, and failure to make it useful ran the risk of it being excessively scholastic and putting logical precision above explanation (Ramsey, 1929). Thus, a theory of meaning needed to employ a human logic reflecting how people used language. This was the chief pragmatist lesson he drew from Peirce.

Misak notes that Wittgenstein was displeased with Ramsey's own thinking, arguing Ramsey did not take seriously profound problems in philosophy, wanting only to solve well-defined philosophical problems and avoid deeper philosophical issues (*Ibid*., 235-7; see references therein). Wittgenstein said that Ramsey was a "bourgeois thinker" only interested in "clearing up the affairs of some particular community" (*Ibid.*, 236). However, this captures the spirit of Ramsey's pragmatism that emphasized the need for focusing on well-defined philosophical

[1] See McGuinness (1988) for Wittgenstein's life to 1921. See Misak (2020) for Ramsey's efforts on behalf of Wittgenstein. See Monk (1991) for a full biography of Wittgenstein.

[2] "[S]ixteen years ago, I have been forced to recognize the grave mistakes in what I wrote in [my] first book. I was helped to realize these mistakes – to a degree which I myself am hardly able to estimate – by the criticism which my ideas encountered from Frank Ramsey, with whom I discussed them in innumerable conversations during the last two years of his life" (Wittgenstein, 1953, x).

problems and not taking up what Wittgenstein perceived as profound problems in philosophy that Ramsey worried were scholastic disputes. Ramsey, as in his criticism of Keynes, was interested in developing a 'human logic' serviceable and clear in its application to everyday problems.

Misak also argues an important influence Ramsey may have had on Wittgenstein concerned the concept of hypothesis (Misak, 2023). Wittgenstein must have been aware of debate about the concept because Russell had emphasized it in connection with progress in science.[3] Yet it had no place in Wittgenstein's picture theory of meaning where propositions were true because they 'pictured' facts about the world. A hypothesis, as a conditional and an open-ended statement, had no place in the *Tractatus*. Nonetheless, people clearly often communicated successfully in hypothetical ways. For Peirce, this was tied to how people formed beliefs which involved dispositions to behave in various ways. Ramsey put this thinking to work in developing his own subjectivist theory of theory of probability whereby degrees of belief could be measured by a person's willingness, or disposition to bet on a belief they had regarding the likelihood of some event (Ramsey, 1926). Misak argues Ramsey influenced Wittgenstein to adopt this kind of dispositional thinking regarding language meanings.

Wittgenstein recorded his interest in the concept of a hypothesis in a notebook kept from 1929 to 1930 in an entry on January 20, 1930. He recognizes that hypotheses work differently from his *Tractatus* propositions, and characterizes them in pragmatist fashion according to which they are true to the extent that they appear useful (Misak, 2003, 122). The 'if-then 'conditionality of hypotheses set the terms by which one proceeded. When speaking in conditional, 'if-then' terms, a person drew upon generally accepted ways of thinking. In effect, then, hypotheses were language rules. In Wittgenstein's later meaning-as-use framework, language is governed by rules of usage that come into play when the appropriate conditions arise. Misak thus argues that what Wittgenstein took from this was the idea that hypotheses are like rules – a key step toward his later thinking.

The concept of hypotheses ceases to be part of Wittgenstein's thinking after these notebook ideas, but rules are central to his ordinary language views about how meaning is determined in language-games. For Misak his meaning-as-use framework thus has its foundation in Ramsey's pragmatist dispositional account of belief. This is how Ramsey influenced Wittgenstein's later *Investigations* thinking.

4. Ramsey and Keynes again

Misak's arguments about Ramsey's pragmatist influence on Wittgenstein re-open the debate regarding Ramsey's influence on Keynes. If Wittgenstein was influenced by Ramsey's pragmatist way of thinking, perhaps so was Keynes. This puts the 1990s continuity/discontinuity debate over Keynes in a new light. What is at issue is not only whether Keynes believed Ramsey's subjectivist theory of probability should replace his objectivist view, but whether Keynes was inclined to accept Ramsey's pragmatist thinking more generally.

[3] "The actual procedure of science consists of an alternation of observation, hypothesis, experiment, and theory" (Russell 1927, p. 194).

Misak does not claim Ramsey took over pragmatist philosophy in all its dimensions and details. If this were argued, it would make it unlikely that Keynes, who never made a case for pragmatist philosophy, was influenced in this way. Her argument is more heuristic in nature leaving it open whether Keynes was influenced by the tenor and spirit of pragmatism. Support for this can be read into Keynes having including sections from Ramsey's posthumously published papers ([1926] 1931) where the tone is broadly pragmatist in his obituary of Ramsey (Keynes, 1931).

This, then, is how economists Bateman and Gerrard re-read Keynes's thinking. Bateman (2023) gives a novel interpretation of Keynes's pragmatic manner in connection with his employing narrative methods of communication to persuade others of his views, particularly in his early economic writings. He argues it was Ramsey's influence that led him to emphasize narrative, particularly at the expense of mathematical argument, and this also led Keynes to adopt Ramsey's subjective theory of probability.

Central to this argument is Keynes's later attention to the state of confidence underlying investment spending behavior in *The General Theory*. There is no room in this analysis for his earlier logical theory of probability in which probabilities are invariant across people. For Bateman this shift in thinking becomes apparent in Keynes's 1933 lectures (Rymes, 1989) in which Keynes is critical of over-emphasis on precision and neglecting vagueness. Keynes had two years earlier published his obituary of Ramsey in which he included text that was like what appeared in Ramsey's essay "Philosophy" (Ramsey, 1929). The similarities between Keynes's 1933 methodological remarks and the thinking in Ramsey's essay are worth attention. Keynes, then, may not have held all Ramsey's views, but Bateman argues he appears to have adopted Ramsey's pragmatic view of the world that emphasizes human psychology.

Gerrard (2023a, b) agrees with Bateman that Ramsey's pragmatist thinking influenced the development of Keynes's *General Theory*, but does not believe this alone shows that Keynes's adopted Ramsey's subjective theory of probability, or that Keynes's narrative argumentation shows that he moved to an entirely pragmatist philosophy.

Gerrard thus places Keynes's concession to Ramsey in a more mixed light. There Keynes said "the calculus of probabilities" as "a set of rules for ensuring that the system of degrees of belief which we hold shall be a *consistent* system" that "belongs to formal logic" is "part of our human outfit." Yet he does not say that we adequately explain this simply as "a useful mental habit" (Keynes 1931, p. 407). Keynes granted that distinguishing human logic from formal logic may be an important task, but it does not put an end to getting formal logic into "good order and its highly limited scope properly defined" (*Ibid.*; see Zappia, 2025, this volume; also see Runde, 1994).

Gerrard goes on to argue Ramsey's pragmatist influence on Keynes was deeper than Bateman sees it, holding following Misak that Ramsey adopted a realist strand of pragmatism from Peirce (rather than from James) that influenced Keynes. This is an interesting argument, but it ignores other possible influences on Keynes's thinking that should also be considered. Indeed, if Ramsey's influence on Wittgenstein provides a new understanding of his influence on Keynes,

since both Ramsey and Sraffa influenced Wittgenstein, we also need to examine whether Sraffa's influence on Wittgenstein offers a new understanding of his influence on Keynes. Consider, then, Sraffa's interaction with Keynes before meeting Wittgenstein.

5. Sraffa and Keynes

Keynes esteemed Sraffa as a monetary economist before Sraffa moved to Cambridge in 1927 and had earlier chosen Sraffa as the Italian translator for his *Tract on Monetary Reform* (Keynes, 1923). Keynes was trained as a Marshallian, but heard of Sraffa's critique of Marshall in an Italian journal (Sraffa 1925), and was encouraged to ask him for a paper based upon it that he published in the *Economic Journal* (Sraffa 1926). Since Keynes continued to employ elements of Marshall's thought in his later work, at issue is what questions did Sraffa's critique create for Keynes regarding Marshall's thinking.[4]

Foremost among them, then, was whether Marshall succeeded in explaining market equilibria in terms of symmetrical forces of demand and supply (explained in marginal utility and marginal productivity terms). Liberally using the *ceteris paribus* assumption (that some matters can be set aside in one's analysis), Marshall developed a short-run, partial equilibrium explanation of markets in which competition generally prevailed. What was set aside were possible factors operating on firms 'average costs in the long-run, which could lead to monopoly outcomes in markets, in particular whether average costs fell in the long-run as firms expanded.[5]

Sraffa was from Turin where he had first-hand experience with the rise of monopoly. Fiat, the giant Italian auto firm, had been founded there in 1899, and anyone could see that its rise was associated with lowering costs of production and driving higher average cost competitors out of business. Indeed, at the time, big, monopoly-type firms were beginning to dominate many European economies, so Marshall's argument that competition generally prevailed was less and less persuasive. Sraffa, then, identified precisely how Marshall had ruled monopoly out, and argued that his conception of competitive market equilibrium was both unrealistic and incoherent.

Keynes could see this much, but likely did not appreciate that motivating Sraffa's critique were his intellectual origins in Turin and the influence of Gramsci. Gramsci, in fact, had a well-developed explanation of the concept of equilibrium, but it is doubtful Keynes was familiar with it, or if so interested in it because it was framed in political terms in contrast to his economic understanding of the concept.

Gramsci is known for developing the Marxist theory of state power, arguing that state power was exercised not only through the police, the courts, the army, and the machinery of government but also through 'private' non-state institutions such as the press, education, and the Church

[4] Sraffa had visited Cambridge since 1924. For his interaction and friendship with Keynes, see Skidelsky (1992, 289-291).

[5] See Kurz, Salvadori, and Signorino (forthcoming) for the relationship between the *ceteris paribus* assumption and counterfactual reasoning in Sraffa.

(Gramsci, 1971). His theory of cultural hegemony thus emphasized the role ideology played in addition to force and violence in maintaining the power of capitalists over the working classes.

He also saw this combination of forces as inherently unstable. Because it was based on repression, it generated an opposed set of forces devoted to resistance – union organizing, labor strikes, popular demonstrations, alternative publications, etc. These two sets of forces came into conflict and would, as Gramsci saw it, inevitably "balance each other in a catastrophic manner ... [and] in a way that a continuation of the conflict can only terminate in their reciprocal destruction" (Gramsci, 1971, 219). He characterized this as an "equilibrium with catastrophic prospects ... between forces whose opposition is historically incurable" (*Ibid.*, 222). Societies, therefore, were not unified wholes made up of sets of consistent practices and activities as dominant ruling class ideologies implied, but instead discordant collections of practices and activities with their conflicting and competing rules and customary expectations.

For Gramsci the practical implication of this was that since ruling ideologies claimed to be the values and norms of society, challenging capitalist power meant these ideologies had to be criticized and exposed as employing distorted representations of social relationships. Sraffa absorbed this lesson, and, given his training in economics, saw it as his responsibility to show how established economic theory possessed the same ideological character (see Naldi, 2000).

Marshall had portrayed the economy as a harmonious process of competition between small firms. Capitalist economies appeared to be governed by laws of nature that societies could not change. Blocked out by Marshall's *ceteris paribus* assumption and symmetrical forces of supply and demand view were power relationships between social groups.

Keynes at the very least saw that competition was not inevitable. He saw that Sraffa's critique stimulated Robinson to work on the theory of monopoly (Robinson, 1933). Keynes would later in his *General Theory* advance a theory of money and economic equilibrium that rejected the reigning Say's Law view of a symmetrical supply and demand. This was not Gramsci's "equilibrium with catastrophic prospects ... between forces whose opposition is historically incurable," but it was not Marshall's harmonious process of competition either.

Sraffa continued to interact regularly with Keynes after moving to Cambridge.[6] In 1930 he joined the 'Cambridge circus,' the reading group that met to discuss the thinking of what would ultimately become *The General Theory*.[7] However, this was the same period when his interactions with Wittgenstein were especially intense. I thus turn to Sraffa's influence on Wittgenstein, and then use this to address his possible later influence on Keynes.

6. Sraffa and Wittgenstein

Ramsey, Sraffa, and Wittgenstein met often from the time Wittgenstein arrived in Cambridge in 1929 until Ramsey died in 1930. Sraffa and Wittgenstein continued to meet until 1946 when

[6] For their friendship despite their differences in politics and regarding Marx, see Moggridge (1992, 471).
[7] On this group, see Moggridge (1992, 532-3) and Skidelsky (1992, 447-452).

Sraffa stopped their meetings.[8] This was the most dynamic time in Wittgenstein's development of his later views. That Sraffa had an important impact on this is clear since he was credited in the *Investigations* Preface not only with Ramsey but as providing the "stimulus for the most consequential ideas of this book."[9]

However, what Sraffa's impact was is only suggested by oft-quoted anecdotes. One is that Sraffa criticized Wittgenstein's idea of logical form by brushing his chin with his fingertips – a Neapolitan gesture of contempt – and asked, 'what is the logical form of *this*?' (Malcolm, 1958, 69). Yes, Sraffa was skeptical of Wittgenstein's concept of logical form, but what motivated him to ask this?[10] Another is the report that Wittgenstein said his conversations with Sraffa made him feel 'like a tree from which all branches have been cut' (von Wright, 2001: 14-15). But what had Sraffa argued that motivated this reaction?

One thing Sraffa got from Gramsci's theory of cultural hegemony and analysis of state power was that explaining power required one not abstract from interdependencies between its different forms. The *Tractatus* emphasis on logical form made statements independent units of meaning, each of which were solely determined by its relation to facts about the world. Thus, there were no interdependencies between statements whereby the meaning of one was related to and depended in some way on the meaning of another. This was exactly the case with the Neapolitan gesture. It could not have an independent logical form because its meaning was related to and depended on many other ways in which contempt could be expressed.

Sraffa's critique of Marshall paralleled this argument. Marshall's short-run partial equilibrium approach used the *ceteris paribus* device to abstract from long-run interdependencies between firms, and showed that competitive firms functioned atomistically as independent logical units. Scholars have not labeled Marshall's thinking a logical atomism for economics, but it has this philosophical character in ruling out interdependencies between firms and making competitive firms economies' logical atoms. For Sraffa, Marshall's *ceteris paribus* abstraction method exhibited the same sort of logicism as Wittgenstein's *Tractatus*.

Wittgenstein would give this up in his later theory of meaning where how language is used depends on its many interdependent forms. He soon came to see this in his transitional *Blue and Brown Books* (1958). In the first, he recharacterized his previous way of thinking about meaning in more practical terms as a kind of pointing to something – an "ostensive definition." This referred us to an activity by which that meaning was acquired.

> If we are taught the meaning of the word 'yellow 'by being given some sort of ostensive definition [in this case, *ostensive* means something like "denoting a way of defining by

[8] Morra (2017) documents this using the Cambridge Pocket Diaries of each, their correspondence, and biography. She classifies their more than 240 meetings into five phases that can be compared to the stages in the development of Wittgenstein's thinking.

[9] Immediately after the crediting of Ramsey Wittgenstein wrote: "Even more than to this – always certain and forcible – criticism I am indebted to that which a teacher of the university , Mr. P. Sraffa, for many years unceasingly practiced on my thoughts. I am indebted to *this* stimulus for the most consequential ideas of this book" (Wittgenstein, 1953, x).

[10] When Sen asked Sraffa if this story was true, Sraffa said he could not remember it because they had had so many conversations (Sen 2003).

> direct demonstration, e.g., by pointing"] (a rule of the usage of the word) this teaching can be looked at in two different ways: (a) The teaching is a drill... (b) The teaching may have supplied us with a rule which is itself involved in the processes of understanding, obeying, etc.: 'involved, 'however, meaning that the expression of this rule forms part of these processes (1958, 12-13).

Rules became central to Wittgenstein's thinking in the *Investigations* about language-games, and this focus shifted his conception of the task of philosophy from abstract, logical analysis to the examination of the interdependent practices and activities whereby language is used. Perhaps the most succinct expression of this in Wittgenstein's words are that Rhees reported he said the most important thing that Sraffa taught him was one needed an "anthropological way" of seeing philosophical problems (Monk, 1991, 261; Arena, 2015; Misak, 2024).

For Sraffa, and Gramsci, an "anthropological way" of seeing the world involved seeing how society possessed many different, interdependent kinds of practices and activities that only appear independent of one another. These aggregations might be stable for a time, but when there were broad social conflicts, such as associated with heightened class struggles, they produced "equilibri[a] with catastrophic prospects."

We should remember that after the horrendous experience of WWI the Victorianism of prewar Cambridge was seen by many as a naïve illusion (Marouzi, 2024). Sraffa arrived in Cambridge when fear and anxiety were again overtaking Italy and Europe. Wittgenstein left Austria as Hitler began to rise to power. The intellectual mood in Cambridge was pessimistic, as seen in Keynes's critical judgement of the Versailles Treaty (Keynes, 1919).[11]

It is not difficult to imagine, then, that when Sraffa and Wittgenstein became friends, Sraffa only had to say to Wittgenstein that his whole abstract logical approach and the theory of meaning it employed was out of touch with the world. However, beyond this, which shared Ramsey's critique of Wittgenstein's theory of meaning, what more was there in Sraffa's long interaction with Wittgenstein that we can find in the latter's later philosophy? Answering this question involves seeing a dilemma Sraffa encountered in his own thinking at this time, and once finding a solution to it seeing how philosophically it also provided Wittgenstein with a solution to one of his own theoretical problems.

After his critique of Marshallianism with its symmetrical supply-and-demand structure, Sraffa began to work on recovering the Classical economics of Ricardo, commenting that this thinking that "makes the value of commodities dependent on the cost of production alone appears to hold its ground as the best available" (1926, 540-1). He began working on showing mathematically how the production of commodities depended on sets of interdependencies whereby commodity outputs could be inputs in the production of other commodities.[12]

Sraffa soon saw, however, that his equations only possessed solutions if the economies they represented produced no economic surplus, or excess of value exceeding the requirements of commodity production. Yet Ricardo's economics made the surplus central to its analysis of

[11] On Keynes's tragic sensibility see Carabelli (2021).
[12] See Kurz and Salvadori (2003) for the mathematicians Sraffa worked with, including Ramsey.

distribution between economic classes, and in his own time the main cause of class conflict and the struggle between the ruling and working classes was over distribution of this surplus.

In an unpublished 1931 paper Sraffa explained his dilemma:

> If one attempts to take an entirely objectivist point of view, the very conception of a surplus melts away. For if we take this natural science point of view, we must start by assuming that for every effect there must be a sufficient cause, that the causes are identical with their effects, and that there can be nothing in the effect which was not in the causes; in our case, there can be no product for which there has not been an equivalent cost, and all costs (=expenses) must be necessary to produce it (D3/12/7: 161; quoted in Kurz and Salvadori, 2008, p. 268).

An "objectivist point of view" is one that works with a physicalist representations of phenomena (Davis 2012, 2018; Kurz and Salvadori, 2008; Marion 2008). Adopting a natural science point of view was central to Sraffa's criticism of Marshall, who had used the neoclassical marginal utility explanation of market demand for goods to argue supply and demand together determined market equilibria. When one dismissed this role for demand, what economic analysis needed to do was show how the values of goods could be explained in terms of their physical production requirements. Yet on the reasoning above, this meant an economic surplus could not exist because it did not meet those requirements.

How Sraffa solved this problem is hinted at by what he next said. First, he characterized the relationships associated with goods production as the 'economic field' and then asserted that in addition to production requirements as causal factors determining the value of goods operating *within* that field there were also other causal forces *outside* of that field beyond its boundary operating *within* it.

> When we have defined our 'economic field', there are still outside causes which operate in it; and its effects go beyond the boundary (D3/12/7: 161 (3-5); quoted in Kurz and Salvadori, 2008, p. 268; see Davis, 2018).

This sounds paradoxical but it only meant that in addition to the physical causes determining the value of goods there were also other types of causes determining their values. Only from this perspective were they beyond the boundary of the 'economic field' and yet both outside it and operating within it. Sraffa then identified these different type of causes with his distributive variables – wages or interest payments to capital – that also entered into the determination of commodity values. When one was determined, then he was then able to generate a consistent set of equations explaining the values of commodities (without reference to demand) for economies that produced an economic surplus, as later demonstrated in his *Production of Commodities by Means of Commodities* (Sraffa, 1960).

This conception of the 'economic field' is of a system that is relatively closed in regard to the principles operating within it (the production requirements of commodity values) and yet also relatively open to other principles outside it but operating within it (the distributive variables). Thus, the principle of interdependence Sraffa emphasized in his conversations with Wittgenstein

was an interdependence between different interacting systems. The production requirements determination of commodity values was a relatively closed system in virtue of the systematic, mathematically shown linkages the production of different commodities involved. In contrast, the system of determining the distributive variables was relatively open because it depended upon all the social factors associated with class conflict and struggle over the distribution of society's surplus.

Wittgenstein can be seen to have adopted this view of interaction between relatively closed and relatively open systems in his later understanding of language and meaning. In the passage quoted above from the transitional *The Blue Book* we see Wittgenstein trying to move beyond his *Tractatus* understanding of meaning by entertaining the idea that a word such as 'yellow' gets its meaning by "some sort of ostensive definition" where this involves a "direct demonstration" of how to use the term as if we could be taught a rule for doing this (Wittgenstein, 1958, 12-13). The "direct demonstration" of how to use a term worked as if by a rule. Yet he then goes on to write: "in general we don't use language according to strict rules—it hasn't been taught us by means of strict rules, either" (*Ibid.*, 25).

This was the paradox he sensed in *The Blue Book*, namely, that language use is rule-governed, but one does not need to know the rules involved to use language. Sraffa's understanding of the interaction between relatively closed and relatively open systems provides a way to dismiss this paradox. Using language involves acting on relatively closed system in which rules govern that use, but to investigate those rules themselves we need to step outside usage to examine relatively open systems of social interaction that underlie them. These systems of social interaction are relatively open because they involve a heterogeneous variety of activities people engage in, just as for Sraffa does the struggle over distribution of shares of a society's economic surplus. Yet, as he says, they are "*outside* causes which operate *in* it" (D3/12/7: 161; quoted in Kurz and Salvadori, 2008, p. 268; Davis, 2018).[13]

Systems, then, whether in determining commodity values or meanings in language uses, are rule-governed in their high degree of determinacy, thus relatively closed, but how we explain these relatively closed phenomena is incomplete until we incorporate their relations with the relatively open domains with which they interact. For Sraffa, this philosophical understanding was an important foundation of his 1960 *Production of Commodities by Means of Commodities*. For Wittgenstein, I argue, it was an important foundation of his 1953 *Philosophical Investigations.*

What now of Keynes's *General Theory*? If Ramsey's interaction with Wittgenstein casts a new light on his criticism of Keynes's logical theory of probability, does Sraffa's interaction with Wittgenstein cast a new light on his influence on Keynes's later thinking?

7. Sraffa and Keynes again

[13] Similarly, in the later *Investigations*, language games are relatively closed systems embedded in forms of life that are relatively open systems.

For Marshall, market equilibria were determined by symmetrical forces of supply and demand. In *The General Theory* Keynes would associate this with the Say's Law proposition that supply creates its own demand and the claim that this meant "there is no obstacle to full employment" (Keynes, 1936, 26). In the midst of the high unemployment of the Depression this was clearly mistaken, and Keynes thus made his goal to explain what determined demand – or effective demand – and thus the level of employment.

In 1930 when Sraffa joined the 'Cambridge circus' he was already involved in reviving and updating Ricardo's Classical economic approach in which prices were determined without reference to demand. Keynes did not follow Sraffa in this, but he did conclude in the economy as a whole supply and demand needed to be explained in terms of distinct principles. For demand he found a new earlier champion of his own later thinking, Thomas Malthus, who he argued anticipated his emphasis effective demand idea (*Ibid.*, 32ff). Thus, Sraffa's 1926 critique helped precipitate this initial shift Keynes's in thinking.

Most scholars say that despite Sraffa's participation in the circus there is nothing in *The General Theory* of Sraffa's post-Marshallian thinking that ultimately appeared in his *Production of Commodities*. Yet Sraffa's distinction between relatively closed and relatively open interacting systems re-appears at the heart of Keynes's *General Theory* with a different set of relatively closed and relatively open interacting systems.

Thus, in the summary of his argument where he explains the principle of effective demand, Keynes states what he regards as the essence of his theory:

> Hence the volume of employment in equilibrium depends on (i) the aggregate supply function, F, (ii) the propensity to consume, C, and the volume of investment, *D*. This is the essence of the General Theory of Employment (Keynes,1936, 29).

The propensity to consume is later explained in terms of the marginal propensity to consume and the multiplier. The propensity idea refers to consumers' disposition to increase their consumption as their income rises by less than their income increases; the multiplier shows how aggregate income increases for every new dollar of new spending. Investment, Keynes later explains, has two determinants: the marginal efficiency of capital, which defines the value of capital goods (in terms of the relation between the supply-price of a capital good and its prospective yield) and the state of long-term expectations, which concerns the psychological state of mind of investors regarding investments they might make, or broadly the state of confidence in the future of the economy.

The propensity to consume, then, functions as a relatively closed system because consumer behavior is conservative – people spend more as their income increases but not as much as it does. Yet what income people have is not solely determined by consumption spending but by that and investment spending. Investment spending, then, functions as a relatively open system because while it depends on how capitalists evaluate the values of capital goods, whether they choose to engage in capital spending depends on the state of confidence about the future of the economy. The problem here is that our knowledge of the future is very limited. "Our knowledge of the factors which will govern the yields of an investment some years hence is

usually very slight and often negligible" (*Ibid*., 149). Indeed, Keynes goes on the describe in rich detail the speculative nature of investment behavior.

In contrast to consumption spending which is predictably determined in terms of the propensity to consume, investment spending tacitly presupposes a convention, the "essence" of which involves "assuming that the existing state of affairs will continue indefinitely, except in so far as we have specific reasons to expect a change" (*Ibid*., 152). Conventions, then, are always fragile and can break down when some unexpected development – war, financial crisis, change in government, etc. – disturbs the existing state of confidence. Keynes's theory of employment, then, works through the interaction of these two systems of spending, the relatively closed one associated with consumption spending and the relatively open one associated with investment spending.[14]

This was Sraffa's systems framework of interdependence that Wittgenstein put to work in his account of meaning as use. For all three individuals, this structural analysis became central to the explanations they developed in their respective domains. We do not know how it was arrived at by Sraffa in his interaction with Wittgenstein. They both encountered paradoxes in what they were trying to explain – for Sraffa how to explain the surplus, for Wittgenstein how to explain rules for which there were no rules. Keynes faced a paradox of his own: how to show an economy worked if supply did not create demand. In any event, what we see in all this is an engagement of philosophy and economics. Neither, then, were to move forward without the other, and at the center of these engagements were Ramsey and Sraffa.

8. Ramsey and Sraffa

Ramsey and Sraffa were the product of two different intellectual traditions, Ramsey drawing from Peirce and Sraffa from Gramsci. How can we assess their different influences on Wittgenstein? On the one hand, McGuiness argues that Ramsey's influence on Wittgenstein was limited and that "the idea that Ramsey was the chief inspirer of Wittgenstein's second philosophy is a mistaken one, unless by 'the second philosophy' it is meant that "intermediate phase in which a revised dogmatism still seemed possible." Ramsey for McGuiness was "the brisk contradictor" while Sraffa made him really change his mind (McGuiness, 2008, 228). On the other hand, Ramsey clearly played an important role in convincing Wittgenstein that there are "diverse kinds of propositions, that we have no need for the atomistic structure" of the *Tractatus*, and that we should "concern ourselves with human belief, rather than with the purely formal relation between thought and the world" (Misak, 2016, 232).

Yet once this was accepted, what more was one to say about the nature of language? If the meaning of a word is not some sort of object for which it stands, how does one explain meaning? Ramsey's answer relied on a pragmatist dispositional account of belief. If meaning is explained in terms of use, this is because people are disposed to use language in certain ways. What Wittgenstein would ultimately say is that rules act as conventions that dispose people to use language in certain ways. What Sraffa then added regarding how rules act as conventions was a social theory of conventions inspired by Gramsci's analysis of sets of interdependent practices

[14] On Keynes's own investment activity, see Marcuzzo and Sanfilippo (2022) and the references therein.

that guide people's different activities (for him in connection with how power was exercised in society at the time).

Gramsci did not advance a particular theory of how different sets of practices interacted. All were simply rooted in people's different kinds of behaviors. Sraffa, however, contrasted two different sorts of behaviors according to how tightly they operated in economic relationships. One concerned how commodity values were determined in terms of physical production requirements; the other concerned how distributive shares of the economic surplus were determined in the conflict and struggle between classes. The first was a relatively closed practice because people organizing production think in terms of physical production requirements. The second was a relatively open one because conventions dictating distributive often changed.

This understanding of open and closed systems also operates in Wittgenstein's explanation of language. While any language-game depends on a relatively closed set of rules, the conventional status of that game depends on how it fits into an open landscape of social interaction involving many different language-games. Language meaning was determinate when one observed a particular language-game, but open-ended when one looked at how language-games fit into language in general. As Wittgenstein concluded in his Blue Book, language use is rule-given but there are no rules regarding why any set of rules exists.

Sraffa communicated this social theory of practices and activities to Wittgenstein. It rested nicely on Ramsey's dispositional account of how individuals were disposed to certain beliefs in providing a social anthropology in which that dispositional account could be embedded. Ramsey treated individual behavior as human conduct; Sraffa provided a social structure to explain how human conduct varied over time and place.

9. Ramsey and Keynes … and Sraffa and Wittgenstein

In the Ramsey-Keynes exchange, we see Ramsey initiating a far-reaching critique of Keynes's early thinking, but his early death left it to others to develop further arguments regarding how Cambridge would move away from its early logical atomist view of the world. Ramsey advanced some of the foundations of those arguments through his critiques of Wittgenstein's early thinking. Yet their interaction remained on the level of philosophy. If it was to indeed move beyond critiques of abstraction and address the nature of human belief, it had to move toward how the social world worked. At Cambridge, this was economics' domain, and Keynes in this capacity was its principle agent. He absorbed Ramsey's criticism, but his 1931 response was conditional and programmatic because not only had his own philosophical thinking evolved but, as *My Early Beliefs* showed, he was not interested in systematically laying out new philosophical views. Getting *The General Theory* done was the goal, and that would need to speak for itself on this score.

One thing that started Keynes's evolution in economics was Sraffa's critique of Marshall. However, Sraffa was also critical of Wittgenstein, and his ability to reason about both economics and philosophy allowed him to advance new thinking for both in the following decades. Yet like Keynes he was also uninterested in laying out new philosophical views but instead in building

new foundations for economics. Thus, we are left with an explanatory paradox regarding change in Cambridge economics and philosophy. We have change in both but no explicit accounts or reports of what produced it. All four of these individuals were involved in laying out new ideas but not in explaining how or why they took the pathways they did.

Nonetheless, when we focus on the critical roles Ramsey and Sraffa as instigators of this change, and observe how economics and philosophy changed in the interwar period, we can reconstruct outlines of an explanation of how and why it did. The complacency of Victorian Cambridge at the beginning of the century could not be sustained after the devastation of the war in a time with increasing uncertainty about the future. It was fortuitous that Ramsey, Sraffa, Keynes, and Wittgenstein were all of such remarkable ability. And fortuitous that they interacted freely and vigorously with one another in pursuit of what economics and philosophy would need to become in the future.

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