



PIERO SRAFFA

Philip Gaskell

PIERO SRAFFA*

1898–1983

PIERO SRAFFA was one of the most remarkable personalities in Cambridge during the years (1927–83) that he spent there—at least this was the judgement of those who knew him, and these were mostly members of the Economics Faculty and the Fellows of the Colleges with which he was associated (King's and Trinity).¹

He possessed the rarest combination of qualities—he was a most meticulous scholar, and at the same time he was also a brilliant original thinker. He was a man with an exceptional range of knowledge which extended well beyond his own professional field; a bibliophile who spent endless time in exploring the antiquarian bookshops of Europe, and succeeded, twice in his lifetime (first in Italy and later in England), in building up a unique collection of rare books. And he spoke with equal fluency in at least four languages.

But above all he was a man with the most attractive personality, with a rare capacity for friendship, which caused so many exceptionally clever and gifted men to fall under his spell, both in Italy and England, ranging from Antonio Gramsci, to Maynard Keynes, to Ludwig Wittgenstein and to Raffaele Mattioli, to mention only a few.

He had a subtle and very personal wit, the capacity of making wholly unexpected responses to points raised in a discussion, but above all he had the rare gift of being able to inspire his partners in conversation just by listening with shining eyes. He had that

* I am indebted to Professor Alessandro Roncaglia of the University of Rome for drawing my attention to a number of factual inaccuracies in the previous draft.

¹ At King's he never held a Fellowship but had high-table rights from the time of his initial appointment, and as he regularly took his meals in College, he was treated as a member of the fraternity, particularly by those who were close to J. M. Keynes, who was the College Bursar (right up to the beginning of the war). He was offered a Fellowship at Trinity College in 1939 as a successor to D. H. Robertson, who taught economics to Trinity undergraduates for many years, but as a result of disagreements with Keynes accepted a Professorship at LSE. (However, on Pigou's retirement Robertson was elected to the Chair of Political Economy in Cambridge, in 1944, after Keynes, who was first approached by the electors, turned it down.)

envious quality of making his friends feel at their best in his company—he made them feel cleverer, more clear-sighted and eloquent (and amusing) than they normally thought themselves to be. He combined modesty and reserve—he never tried to show himself superior by squashing an opponent in an argument—which, together with an attractive appearance, meant that he possessed a magic charm—which alas gradually faded away after a prolonged period of illness which led to a progressive deterioration of his mental powers during the last four to six years of his life. His charm, his wit, his manners, were a superstructure which by themselves would not have made him so impressive a personality had they not been combined with an exceptional strength of character. He possessed strong and clear convictions and a deep underlying sincerity and seriousness of purpose.

Though he spent much the greater part of his life—56 years—in Cambridge, first as a University Lecturer, then as the Librarian of the Marshall Library and as Assistant Director of Research, and later as the Director of Studies of Economics at Trinity College, he never wavered in his loyalty to his native country, Italy. He never thought of exchanging his Italian nationality for a British one, even though he was wholly unsympathetic to Mussolini's Italy, and knew full well that he might face internment as an enemy alien in case of war—an eventuality for which he was prepared well before the outbreak of the War. And he followed events in Italy closely, through frequent visits during the vacation periods, through regularly receiving Italian newspapers (which he read daily, giving them as much attention as the English papers), and through an endless stream of visitors from Italy, whether in the capacity of students, visiting professors, or simply sightseers, and so on, to whom the chance of meeting Piero Sraffa (whose name had become something of a legend in intellectual circles) was one of the great attractions of Cambridge, comparable with the sight of Trinity Great Court or the King's College Chapel. He remained thoroughly involved in the political affairs of Italy, while he kept aloof from the political developments of Britain. In all these respects he considered himself as a guest of England, not as an immigrant.

Piero Sraffa was born in Turin on 5 August 1898, the son of a well-known lawyer, Angelo Sraffa, and his wife, Irma Tivoli, who came from a well-known Jewish family of Piedmont. Angelo Sraffa (who also came from a well-known Jewish family from Pisa) was a distinguished jurist who from 1916 to 1924 was Rector of the Bocconi University of Milan, while previously he was

Professor of Law at various Italian universities. This explains why Piero's education was partly in Parma and partly in Milan, as well as in Turin, where he graduated as a Doctor of Law in 1920 with a dissertation on the inflation in Italy during and after the war, written under the supervision of Luigi Einaudi (one of the leading economists of his generation who continued to enjoy under Mussolini the privileges of a Senator despite his known anti-fascist views, and who became President of the Republic after the war in the years 1949-55).¹ The theme of his dissertation implied that Sraffa's initial interests were in the analysis of current problems, and in the field of money and banking, rather than in basic economic theory. This is borne out also by subsequent writings which he prepared at the request of Keynes.

After graduation, Sraffa came to London to attend a term in the London School of Economics as a general research student, and it was on this occasion that he made the acquaintance of Keynes during a brief visit to Cambridge. He had a letter of introduction to Keynes from Mary Berenson (the wife of Bernhard Berenson, the famous art expert of Florence who had known Keynes since 1905).

The conversation must have turned, *inter alia*, to the scandalous state of Italian banking, and the way in which the Italian State was forced to come to the rescue of the Banca di Sconto,² even though this was an illegal use of public money. Keynes asked Sraffa to write a short paper on all this which he wanted to publish in the weekly *Manchester Guardian Commercial—The Reconstruction of Europe* (of which Keynes was Editor) and Piero responded with a paper which Keynes regarded much too high level for the *Guardian Weekly Supplement*, but suitable as a paper for the *Economic Journal* (of which he was also the Editor). Hence it appeared in the June 1922 issue of the *Economic Journal* under the title 'The Bank Crisis in Italy', which was Sraffa's first published academic contribution to economics. However, Keynes still wanted a couple of pages for his *Guardian*

¹ This dissertation, printed in Italian as a pamphlet under the title 'L'inflazione monetaria in Italia durante e dopo la guerra' (November 1920), stressed the relevance of socio-political factors for interpreting the inflationary process, and from the point of view of future policy comes out strongly in favour of a formal devaluation of the lire as against deflation. (There were many people in Italy at that time, just as there were in England, who believed that pre-war parities must be restored.)

² A bank of recent creation—which only began operations shortly before the war, but at one time had 220 local branches all over Italy—far more than any of the other banks.

Supplement, which Piero also supplied and the latter (dealing with the current difficulties of the main surviving banks, particularly the Banca Commerciale) appeared in December 1922. The trouble with this latter publication was that it was simultaneously printed in four languages (one of which was Italian), so that while the original article (which was brutally frank and even hostile in tone)¹ evoked no response whatever, the second was brought to the attention of Mussolini (who had become Prime Minister in a *coup d'état* only two months previously), who described the article in a telegram sent to Piero's father as 'an act of pure and simple banking defeatism, and an act of true and real sabotage of Italian finance' and demanded with lightly veiled threats that his son should write a full recantation of his assertions in the same journal. According to Sraffa's account (in a letter to Keynes) Mussolini wrote that 'his being a socialist does not allow him to spread abroad mistrust in the institutions of Italian finance—I give warning that I reserve my right to demand by other means a very strict account of this scurvy act'.² His father replied on his behalf that 'the article in question is a pure and simple statement of figures and facts publicly known and not contradicted, he has nothing to rectify and nothing to add, and therefore cannot accede to the request to write a second article'. Mussolini made no formal reply but he must have been instrumental in giving some kind of warning to the British authorities about Sraffa being a 'dangerous radical'.³

There is for the moment no direct evidence of this; but there is circumstantial evidence in the contradictory treatment accorded to Sraffa by the British consulate in Milan and by the immigration authorities at Dover only a few days later.

Keynes, on hearing about Mussolini's reactions to his *Guardian* article, sent a new letter of invitation to Sraffa on 9 January,

¹ It is sufficient to quote the final sentence to convey its flavour: 'But even if these laws [referring to anti-trust legislation and the regulation of banks to the disclosure of limited liability companies, etc.] were not futile in themselves, what could be their use as long as the Government is prepared to be the first to break them as soon as it is blackmailed by a band of gunmen or a group of bold financiers?' (*Economic Journal*, June 1922, p. 197).

² Contained in a letter from Sraffa to Keynes, dated Milan, Christmas 1922, and preserved among the Keynes papers in the Marshall Library.

³ The only published reaction to Sraffa's article was a letter by the President of the *Banca Commerciale Italiana*, Dr. Toeplitz, in the *Manchester Guardian*, which contradicts some of the statements in the original article, but which in the words of Keynes 'was very moderately worded'. It elicited a reply from Keynes, who must have had the benefit of Sraffa's advice in drafting it.

asking him to come and stay in England for some time, where he could 'probably get him some congenial occupation'. In his reply on 13 January Sraffa stated that he would of course be only too happy to go to England but might not be able to come now as one of the banks, the Banca Commerciale Italiana threatened to issue a lawsuit, in which case he must remain in Italy to defend his case. However, the Banca Commerciale was unable to proceed with the lawsuit as their legal advisers could not find grounds on which such an action could be taken. Hence he made the usual preparations for his journey to England; he obtained a new passport from the Italian police authorities on the 20th and a visa from the British consulate on 22 January, and arrived at Dover on the 26th.

However, he was refused admission to Britain under para. 1(3)g of the Aliens Act (which, as he learnt later, meant on a special order by the Secretary of State). He was closely questioned by the immigration officials about his connections with Italian banks and fascism and his relationship to Mussolini.

Keynes, on learning about this, wrote a letter to J. C. C. Davidson, who was the Prime Minister's Parliamentary Private Secretary, explaining the situation and suggesting that 'it surely cannot be the business of our Home Office to abet the more outrageous stupidities of Mussolini'.¹ It was not, however, until the advent of the Labour Government in the following year that the Home Office ban was definitely lifted.

Meanwhile Sraffa's intellectual interests had shifted to the more fundamental issues of the theory of value. The change was undoubtedly connected with the new friendship he formed after the war with Antonio Gramsci, whom he first met in 1919.² Gramsci was seven years older than Sraffa and a brilliant intellect with a remarkably strong personality who had a lasting influence on Sraffa's development and modes of thinking—although, as shown below, the two were by no means always in agreement. Though Sraffa never joined any political party, either the Socialist party or (after its foundation in 1921 when Gramsci became one of its founders) the Communist party (because he did not want to accept any implied constraint on his intellectual freedom), he followed his friend's activities

¹ Letter dated 29 January 1923, *Keynes Papers*, King's College Library.

² Sraffa was conscripted into the Army in 1917 but as far as I know he never served at the Front. However, owing to his conscription, he was able to take university examinations in the Faculty of Jurisprudence without attending classes.

closely, and contributed to Gramsci's paper, *L'Ordine Nuovo*, producing short papers on economic topics as well as translations of articles from French and German. More important than these, he came to view both current events and intellectual trends through their effects on the class struggle.¹

He held a number of jobs—one of the earliest was with the City Administration of Milan where he set up an office for the collection of labour statistics (a post from which he resigned when the Fascist Government came into power). Some time later (in November 1923) he obtained an academic post as a lecturer ('professore incaricato') in Public Finance and Political Economy at the University of Perugia. Three years later, starting in March 1926, he obtained a Professorship in Economics at Cagliari in Sardinia where he taught in the academic years 1925-6 and 1926-7. He resigned the Chair in Cagliari at the beginning of the 30s to escape the newly introduced obligation to swear fidelity to the fascist regime, and was reinstated after the fall of fascism.

His intellectual interests changed as a result of his new friendship and new orientation; he gave up his early preoccupation with the institutional side of money and banking, and the causes of instabilities in the value of money² and turned to the more abstract issues connected with the theory of value. Though his basic interest was no doubt connected with the labour theory of value of Ricardo and the English classical school, and the later developments of that theory due to Marx, he began by reconsidering the theory currently taught in Italian faculties in economics, which was largely the result of the influence of Pantaleoni,

¹ A letter from Sraffa to Gramsci under the title 'Problemi di oggi e di domani' (Problems of today and tomorrow) was published in the *L'Ordine Nuovo* together with Gramsci's reply, in the issue of 1-15 April 1924. Sraffa's letter (which appeared under the signature 'S') urged Gramsci, and through him the Italian Communist party, to form a united front with the bourgeois opposition parties against fascism and fight for a return to democracy. Gramsci wrote a strongly worded reply which maintained the orthodox Communist position of that period of having no truck with the bourgeoisie. (However, towards the end of his life, Gramsci also came to advocate an alliance of all democratic parties against fascism.) After Gramsci's arrest in 1926 Sraffa gave Gramsci every possible assistance. He organized help through Gramsci's sister-in-law, Tatiana Schucht, supplied him regularly with books and journals, and provided an important stimulus for the production of Gramsci's *Prison Notebooks*. He made repeated attempts to secure his release and acted as a link with Gramsci's Communist friends who were still at large.

² It was in this early phase that he decided to translate Keynes's *Tract on Monetary Reform* (1923) into Italian, which appeared under the title *La Riforma Monetaria*, published by Fratelli Treves in 1925.

who developed much the same kind of blend of classical and neo-classical economics (i.e. of Ricardo and the post-1870 marginalists) as was implied in the 'particular equilibrium' method of Marshall which became the prevailing orthodoxy in English universities (or at least in the majority of them).

The fruits of his investigation emerged in a long paper, published in 1925 in *Annali di Economia* under the title 'Sulle relazioni fra costo e quantità prodotta'. The main thesis of that paper was the attempt to show prices as being determined by the intersection of collective demand and supply curves for each particular commodity, the prices of other commodities, etc., being taken as given, and the nature of the supply curve being determined on whether the commodity in question is produced under diminishing or increasing returns; with the latter being only compatible with the general assumption of perfect competition in cases where the returns are due exclusively to economies external to the firm but internal to the individual industry, which he regarded as a virtually empty category. The main conclusion of that paper was that the Marshallian approach can only yield consistent results in the case of constant costs (constant returns to scale and perfect competition in factor markets), in which case the 'classical and neo-classical synthesis' of Marshall yields much the same results as those of the classical school—i.e. that prices are determined by costs of production alone; it is quantities produced which depend on demand and the consumers' utilities which help to determine demand.

The Laws of Returns under Competitive Conditions

The paper in the *Annali di Economia* aroused the interest of Edgeworth,¹ who until his dying day kept up his reading of all newly published work on economic theory in at least half a dozen languages, and he told Keynes about Sraffa's paper which impressed him very much and suggested that he approach Sraffa with the request to write a shorter paper on the subject for the *Economic Journal*, so that English readers who do not read Italian should have the gist of his criticism of the methods of Marshall's

¹ F. Y. Edgeworth (the author of *Mathematical Psychics* and Drummond Professor of Political Economy at Oxford) was undoubtedly the leading British economist of his generation. He was the first editor of the *Economic Journal*, which started in 1891, and he went on editing the journal single-handed for the next 20 years, until the end of 1911. In 1912 he handed over the editorship to J. M. Keynes, but in the years 1919–25 his name reappeared as co-editor with Keynes until his death in 1925.

Principles. However, he died before he drafted and dispatched that proposed offer. Thereupon Keynes wrote to Sraffa and explained how highly Edgeworth thought of his article and that he intended to express his appreciation in a letter just before he died, coupled with a request for an article. Sraffa, in a long letter dated 6 June 1926, expressed his joy on hearing about this, for he regarded Edgeworth as the greatest authority on the subject. He reacted to Keynes's suggestion by saying that he very much regretted not having received Edgeworth's 'sketch' of the proposed paper, and failing this, he set out, in nearly four typewritten pages, a fairly detailed outline of the paper he would be very happy to prepare for the *Economic Journal*. Keynes evidently approved his suggestions and Sraffa thereupon wrote the paper under the title 'The Laws of Returns under Competitive Conditions' which appeared as the first article in the December 1926 issue of the *Economic Journal*.¹

There are several things about this paper and its origin which defy understanding. Though the full correspondence has not been found it is pretty clear from the date of Sraffa's first letter to Keynes, giving a 'précis' of the argument of the paper, that allowing for all possible expediency in opening and answering letters and the efficiency of British and Italian postal services in the 1920s, Sraffa could not have received Keynes's go-ahead before the middle of June at the earliest. And allowing for all possible speed on the publications side, Keynes could not have arranged for it to be the front article in the December issue of the *E.J.* unless he was able to send the final version of the manuscript to the printer by the first week of September at the latest. Since Sraffa was in Milan at the time, the receipt of proofs, proof-reading by the author and its dispatch back to Keynes in Cambridge must have taken up to 2 to 3 weeks at the minimum. Under present-day conditions a printer would not be able to handle the job of printing, transferring corrections from galley proofs, preparing page-proofs, making final corrections to the published version, preparing the blocks and printing in less than 2 to 3 months, if not 5 to 6 months,² in fact the maximum time available to the printer for all these jobs could not have exceeded 4 to 6 weeks.

¹ Cf. *Economic Journal* (December 1926), pp. 534-50.

² The Oxford University Press currently requires the receipt of a manuscript by early January in order to be able to ensure publication of a July issue of the *Oxford Economic Papers*. The relative efficiency of the Cambridge University Press is no greater.

However, these are by no means the most incredible aspects of the story, for the article as printed turned out to be one of the most important to appear in this century in the field of price and value theory in *any* academic journal. It is written in perfect English prose, terse and precise throughout, in the most elegant academic style, without a superfluous sentence or even a superfluous adjective. On re-reading it now, nearly sixty years after its publication, it still appears as a unique article—one is struck by its easy mastery of the numerous aspects of the problem, its excellent exposition and the novelty and the sweeping character of its conclusions. After a re-count of his criticisms of the Marshallian techniques and the Marshallian (or Pantaleonian) use of the concepts of increasing or decreasing returns, as used by Marshall in his derivation of a supply curve for any particular commodity, Sraffa shows that diminishing returns cannot attach to a *particular* industry or commodity in isolation, unless that industry happens to be sole user of some particular factor which is scarce in supply—otherwise the cost of production for one commodity cannot increase without raising the costs and prices of other commodities as well. Equally, increasing returns due to the factors first emphasized by Adam Smith derive from increased specialization and increased division of the processes of production which cannot but affect a whole group of industries (if not *all* industries) simultaneously. He therefore concludes that only constant costs (horizontal supply curves) are consistent with the Marshallian system. However, increasing returns *are* important in manufacturing industry as a matter of fact, and therefore the typical cost curve (particularly a long-run cost curve of an industrial commodity) is likely to be downward sloping—which is inconsistent with the Marshallian conception of prices and quantities of any particular commodity being determined competitively by the position of its demand and supply curves.

The solution proposed by Sraffa, i.e. 'the absence of indifference on the part of the buyers of the goods as between different producers' which may be due to any number of causes, such as 'long custom, personal acquaintance, confidence in the quality of the product, the reputation of a trade mark, or sign or a name with high traditions', all involve 'a willingness on the part of a group of buyers who constitute a firm's clientele to pay, if necessary, something extra in order to obtain the goods from a particular firm rather than from any other'.¹ In the subsequent five

¹ Op. cit. in n. 1, p. 622, pp. 544-5.

pages Sraffa develops the theory of imperfect competition, which contains much the same reasoning and conclusions as are found (developed of course in much greater detail) in Joan Robinson's book¹ published seven years later, and E. H. Chamberlin's book published at the same time.² Joan Robinson, in the Introduction to her book, acknowledges Sraffa as the source of her inspiration very handsomely³—however it is only after reading Sraffa's 1926 article afresh that one realizes that he anticipated most of the conclusions of the theory of competition as presented in Joan Robinson's book, and also in that of E. H. Chamberlin, and not just the assumptions.

How this article came to be written in the two months between the middle of June (which was the earliest *starting* date for its preparation) and the middle of August (which is definitely the latest *completion* date in view of the date of its publication) remains somewhat of a mystery, the more so since its elegant and technically faultless English prose indicates that he must have received some help from a first-rate English economist in perfecting and 'polishing up' his style.⁴ Sraffa was a great friend of the Italian correspondent of the Manchester Guardian who undoubtedly helped him, but as the paper makes faultless use of English economic terminology it is probable that the Editor himself had a hand in the final version.

The publication of Sraffa's article evoked an instant response of well-nigh universal praise and admiration. The nature of this reaction is best shown in a letter from Keynes to Sraffa dated 25 January 1927, a carbon copy of which survives and which it is worth quoting in full:

Dear Sraffa,

Your article in the December Journal has been very much liked over here. Everyone I have spoken to agrees that it puts you in the

¹ *The Economics of Imperfect Competition* (Macmillan, 1933), xii + 352 pp.

² Chamberlin's, *The Theory of Monopolistic Competition*, preceded the publication of Joan Robinson's book by a few months only. However, he claims that most of the analysis and conclusions were contained in a Ph.D. thesis submitted to Harvard University on 1 April 1927 and that the thesis was written under Allyn Young's supervision in the course of the years 1925-7, and *before* he had seen Sraffa's article.

³ See in particular *op. cit.*, pp. 3-5.

⁴ There are numerous letters from Sraffa to Keynes written in that period, in Sraffa's own handwriting, which show that while at that time his command of English was good, it was by no means perfect, and does not stand comparison with the style of the published article, which latter would give credit to a native writer or philosopher.

front rank of the younger economists. Pigou is extremely interested, and has been looking up your Italian article. You may be interested to know that he feels he must, in the light of it, reconsider his whole position.

This leads up to a suggestion which has been passing through my mind lately, which I mention to you for what it is worth. I don't know how comfortable you are in your work in Italy just now, or whether you have been successful in getting the Chair at Genoa. If you have, probably ignore what follows. If not, would you feel in the least inclined to consider, if it were made, the offer of a University Lectureship in the University of Cambridge? The income which you could probably get, directly or indirectly, would be rather less, or rather more, than £500 a year, according to the amount of teaching work you cared to undertake. The length of tenure would probably be mainly at your own option. You could come for a year and go back home again after that. Or, if you liked it, you could stay longer. The idea of leaving your own friends and grappling with the bother of teaching in a foreign language may make this suggestion quite distasteful. If so, I shall understand it. But if, on the other hand, there are any attractions in a period at Cambridge, let me know. Please understand that I write this without authority. But after speaking to Pigou I am inclined to think that the University would consider creating a new lectureship in your favour if it were thought that you might accept.

Ever yours sincerely,
(sgd.) JMK¹

Professor Piero Sraffa

The invitation extended to Piero Sraffa, a foreigner not resident in this country, to come to Cambridge as a lecturer and to create a special post for the purpose, is a rare honour though in the present century it is by no means unique. Rutherford's invitation to the Russian physicist Kapitza, and G. H. Hardy's invitation to Ramanujan (a mathematical genius without formal education employed in the postal services of India) to come to Trinity College as research workers have both occurred in the early decades of this century. But for earlier examples we may have to go back to the invitation extended to the Dutch theologian, Erasmus, to come and teach theology in Cambridge in 1511—which occurred four centuries earlier.

Anyhow, Sraffa reacted to Keynes's suggestion with great enthusiasm.² In a letter from Cagliari, dated 6 February 1927, he

¹ Keynes had the habit of putting his initials to the carbon copies of letters which he actually signed.

² Original in the Keynes Papers, Marshall Library.

said that Keynes's letter 'filled me with joy . . . my happiness is only tempered by the regret of being unable fully to express my gratitude for your benevolence and kindness'. He couldn't think of anything he could wish more than a teaching post in Cambridge, and he hoped that by spending the summer vacation in England his English would improve sufficiently 'not to speak any good English but at least to make myself understood'. However, he was only too conscious of his own limitations—'if I were to rely only upon my own judgment I would oscillate between the desire of coming to Cambridge and the fear of a fiasco—and would probably be unable to decide'. However, he trusts Keynes's judgement who would not have made the offer if he did not think that Sraffa could take the risk, so if the offer were made, he would be happy to accept.¹

The post was duly created and advertised, and the Appointments Committee in Economics met on 30 May, and elected Piero Sraffa to the post by unanimous vote, to take effect from 1 October 1927, for four years in the first instance.²

Keynes notified Sraffa of his appointment in his letter of 31 May, when he also detailed the nature of his duties (three courses of lectures in the year, which means 2 hours a week in each of three terms) and he suggested that it might be easier for him to give advanced lectures to smaller audiences, as for example one on the theory of value, a second one on the theory of distribution, and a third one on something in a more concrete field: 'such as Problems of Public Finance as handled by Continental Economists and with special reference to continental practices'. He advised him to make his choice fairly soon so as to get them printed in time in the Lecture List, but that 'there will be no difficulty whatever in your changing your mind and substituting something else at the last moment'. Keynes also arranged accommodation in furnished rooms in one of the College hostels; later on he provided him with a self-contained flat on the second floor of a College building reserved for Fellows (17B St Edward's Passage), where Keynes himself occupied a first-floor flat for weekends in Cambridge with his wife Lydia.³ It was a bare 2 minutes from the College.

¹ Letter dated Cagliari, 6 February 1927, preserved in the Marshall Library.

² The minutes of the meeting, with the list of those present and voting, are preserved in the University Library.

³ This was in 1937, after the death of Sraffa's father, when he brought to England his widowed mother (who spoke fluent English) and the two lived happily together; Lydia Keynes became a great friend of Piero's mother and had the habit of 'dropping in', when in Cambridge, several times a day.

Keynes also arranged high-table dining rights (which also include the right to the use of the Senior Combination Room) for Sraffa at King's and as he regularly took all his meals in College and preferred to eat the same meal as often as possible¹ he soon became one of the best liked and popular figures in the College, even though he was not formally made a Member of the College until 1930, and was never made a Fellow. This situation continued until he was induced, in 1939, to accept a Fellowship at Trinity College, after D. H. Robertson's departure to a Professorship at LSE had created a vacancy in the College for the teaching of economics. After the death of his mother, at the end of the war, Piero became a resident of Neville's Court (of Trinity College) and took all his meals in College—a form of life that suited him admirably and led him, as an expression of gratitude, to leave all his not inconsiderable personal fortune and valuable library to the College.²

In Cambridge he was greatly liked by Keynes's circle of friends, and was a member of the 'Cambridge Circus'—a discussion group dealing with what would now be called 'macro-economic problems', who advised Keynes of the views they formed of the causes of insufficient demand, unemployment, and sometimes concentrated on specific questions on which their views were sought by Keynes.³ Sraffa, who must have been invaluable as a critic and

¹ As Keynes records in a letter to Lydia, he ate cold apple pie with cream regularly twice a day for seven days in the week.

² Though Sraffa was the son of a prosperous lawyer, he was only able to bring a small part of his father's fortune out of Italy. He disliked gambling, and was also against speculating on the Stock Market, not so much on principle, as out of a conviction that one is bound to lose on unsuccessful bets a large part of the gains made on successful outcomes. Hence his basic principle was to wait for the one occasion when a large speculative gain appeared to be absolutely certain, and then put all the money one can get hold of on this one gamble. The one occasion which appeared to him to satisfy these criteria occurred during the War when the price of Japanese bonds fell to a very low level—something between 5–10 per cent of their nominal value, or not more than 1–2 per cent if one also takes the likely value of unpaid interest payments into account. He was convinced that, however the War might end, the Japanese would fulfil all their foreign financial obligations, whether they were made to do it or not. Hence he put all his money into Japanese bonds, after careful investigation of which of them appeared most undervalued, and he must have made a gain of 40 to 50 times the money he put into it, when, after the War, Japan resumed servicing the bonds and paid the accumulated interest during the years of hostility. It is not known how much money he made on this transaction, but the College valued his bequest at £1.5 million in 1983, one half consisting of the value of his library.

³ For an account of the Cambridge Circus cf. *Collected Writings of John*
[footnote cont. on p. 628]

as a discoverer of 'snags', remained sceptical of the major concepts and thrust of the *General Theory*.

He also formed a close friendship with the Austrian-born philosopher Ludwig Wittgenstein, the founder of linguistic philosophy, who was a Fellow of Trinity College and later became Professor of Philosophy at the University. They met regularly on afternoon walks and engaged in endless discussions during the time that Wittgenstein prepared his second book entitled *The Nature of Philosophical Investigations*, in which he considerably modified his original position put forward in his first book, the *Tractatus Logico-Philosophicus*. In the introduction to the later work Wittgenstein paid the most generous tribute to Sraffa's unceasing interest in philosophical problems and to his capacity and readiness to engage in endless discussions. He stated in the Introduction to his second book (translated from the German original) that 'it was *this* stimulus to which I owe the most momentous ideas of this book' (italics in the original).¹

One feature of Piero Sraffa's character of which no mention has yet been made was his incredible shyness in speaking in public—whether to small audiences of friends or acquaintances in a Combination Room, or to a larger audience in a lecture. This was despite the fact that by all 'worldly' criteria his lectures were a great success—for, according to the recollection of some who attended them, he had the 'knack' of getting the audience to ask questions and to involve them in a discussion. (The same inhibition extended also to the written form of communication—he could only bring himself to put the formal exposition of his ideas on paper after a great deal of agony.) This is what made him so conspicuous as a listener. It also meant that he suffered agonies at the thought of giving a lecture in public and though he often promised himself to master this inborn defect, he never really succeeded. Thus, while he spent the summer of 1927 in preparing his lectures for the autumn, when it came to the point he asked for exemption in the initial year so as to be able to learn to lecture in English more fluently. This was readily granted and he delivered his lectures as planned in the years 1928–9 and 1929–30. However, in 1930 his 'disgust' at his own lectures became

Maynard Keynes, xiii. 337–42. The members of the Circus (apart from a limited number of carefully selected undergraduates) included Richard Kahn, Joan and Austin Robinson, Piero Sraffa, and James Meade (who was on a year's leave in Cambridge from Oxford).

¹ It was a question of Sraffa's which convinced him that language and reality do not necessarily have a common logical form.

dominant and so he went to Keynes to announce that he had decided to resign his Lectureship. Keynes, who was extremely fond of Piero, would not hear of Sraffa leaving Cambridge and hastily organized two jobs for him, to which, with some years delay, there was added a third. One was to a newly created post as Librarian of the Marshall Library, to which Sraffa's qualification as a bibliophile uniquely fitted him.¹ The second was the appointment as Editor to the Royal Economic Society's proposed edition of the Collected Works of David Ricardo. The third was another new post as Assistant Director of Research in general charge of research students.

The Collected Works of Ricardo

The Royal Economic Society decided in 1925 to publish an entirely new edition of the Collected Works of David Ricardo. The task of editing the publication was first entrusted to T. E. Gregory of the London School of Economics, who, as it turned out, felt rather overburdened with his many preoccupations, and was relieved to be able to relinquish the job five years later. Keynes's original plan was that Sraffa should be able to bring out a first volume, a reprint of the *Principles*, within a year, and the next to follow soon after, so that the whole edition be published within the next few years. But he reckoned without Piero Sraffa's extraordinary aptitudes and even more extraordinary appetite for meticulous scholarship, and the seemingly endless opportunities for following up clues and trails and discovering the precise causes, or the precise nature, of the occasion which gave rise to changes in subsequent editions of the *Principles*, or which illuminated the background of statements made in pamphlets, letters, or Parliamentary speeches. There were in addition gaps in the form of letters written or received, drafts or half-finished articles which were known to exist and which had not been found by earlier Ricardo hunters such as Professor Hollander. By the time Sraffa was entrusted with the task a great deal of material had come to light, such as his *Notes on Malthus*, discovered in 1919 (published in an edition prepared by T. E. Gregory), and a much more important find in 1930 which turned out to contain almost all the letters of permanent interest which Ricardo received.

¹ The Marshall Library was originally formed from Marshall's own library after his death in 1924, administered by Marshall's widow, but with a regular allocation of funds out of the Faculty's budget for the purchase of new books and periodicals.

But large and important gaps remained, such as Ricardo's side of the voluminous correspondence he carried on with James Mill, as well as Malthus's side of the correspondence with Ricardo.

Indeed, the most important find was not made until July 1943 by Mr C. K. Mill in the home of his father-in-law, Mr F. Cairnes, at Roheny, Co. Dublin, when a brown paper parcel addressed to J. St Mill in India House was found to contain all Ricardo's letters to James Mill as well as a number of unpublished writings of Ricardo which also came into James Mill's possession. These finds, but particularly the last one, more than justified the twenty years' delay in publication. As a result of the new find, the page-proofs of one of the volumes had to be broken up, and the extended material rearranged in two volumes with all the newly found letters inserted in chronological order. As Sraffa states in the Introduction, well over half of 555 letters of Ricardo reproduced in the new edition have not been previously published.

Sraffa's scholarly urge was by no means assuaged however by the discovery of new letters and writings of Ricardo. An even bigger effort, fully engaging his abilities as a detective, was spent in discovering the precise identity of numerous persons mentioned in the letters, and the precise circumstances surrounding particular speakers (in Parliament or outside) when months of investigation crowned by success were often summed up in a few words in one of the innumerable editorial footnotes.¹

The twenty years' delay in the publication of the *Works and Correspondence of David Ricardo*, which gave rise to a great deal of criticism, thus proved amply justified when the edition finally appeared in ten volumes in 1951-5 (plus an index volume added later), and was at once acclaimed as a unique monument to scholarship. Clearly no English author, in the scientific or the literary field, had received a comparable reward more than 125 years after his death, while in Sraffa's own view the only

¹ The best example of a detective story is that given in the Appendix to Vol. III on the identity of the oft-quoted 'Mr. — of the Bullion Report' who was described as a 'Continental Merchant'—an anonymous witness whose evidence to a Parliamentary Committee was published whilst protecting his personal anonymity—something that was quite contrary to Parliamentary usage. Sraffa, however, has identified him as a Mr John Parish who was entrusted by the British Government to transmit to the Emperor of Austria the remainder of the subsidy payable to Austria by the British Government across the Continental Blockade, which he succeeded in doing through 'laundering' the money several times through merchant bankers in Hamburg and Berlin. The fact that Mr — was a secret British agent explains why Parliament was ready to protect his anonymity contrary to rules.

comparable foreign work is the German edition of the *Collected Works of Friedrich List*, published in the 1920s, after more than twenty years' work of a large committee of scholars.¹

The Royal Economic Society's edition of Ricardo will thus remain a lasting monument to Piero Sraffa as a scholar.²

Production of Commodities by Means of Commodities

It remains to deal with the aspect of Sraffa's work to which he himself attached the most importance: his contribution to economic theory.

One aspect of his work, that connected with his 1926 *Economic Journal* article, has already been considered. In the light of this we must regard Sraffa as the originator of the theories of imperfect competition which have generally been regarded as a 'break-through' in studying the manner of operation of competition in the non-agricultural part of private enterprise economies.

However, he never followed up this aspect of his work (and as far as I know never made any further reference to it) after his 1926 article. One can only surmise the reasons for this: the theories of imperfect competition had nothing to contribute to the fundamental issues raised by the theory of value which in the hands of the classical economists, from Ricardo to Marx, provide the

¹ Sraffa's extreme inhibitions against speaking or *writing* for publication (to which reference has already been made) provided another serious obstacle to the early completion of the work, since Sraffa could never bring himself to put pen to paper for writing a 'final' text of the Introduction, even when the ideas which he wished to express in it were clearly worked out in his mind. The obstacle was overcome by calling in the assistance of M. H. Dobb, whose qualities were complementary to those of Sraffa; he was not a deep original thinker but had considerable powers of exposition with a clear and fluent style. Hence, as Sraffa explains in the General Preface, I, x, the actual writing of the Introductions to vols. I, II, V and VI, was due to Dobb—though the ideas were Sraffa's (this is particularly important in connection with the Introduction to vol. I, which gives a wholly new interpretation of Ricardo's theory of value).

² A good example of Sraffa's sleuth-like qualities as a scholar is provided by the reprint of 'An Abstract of a Treatise of Human Nature' jointly by J. M. Keynes and P. Sraffa (1938), a pamphlet the authorship of which was generally attributed to Adam Smith, but which Keynes and Sraffa (who edited the new edition) discovered to have been written by David Hume himself. The Introduction, which takes up 30 pages, gives a detailed description of how the original attribution arose, and supplies evidence of the true authorship. (The three volumes of the *Treatise* sold very slowly, and failed to acquire the interest which Hume fully expected from it. The short 'Abstract' was intended to whet the reader's appetite but for understandable reasons Hume did not wish it to be known that he prepared it himself.)

key to the direction of social change. The classical view of social development as the result of the interaction of technological change which governs the changes in the modes of production; and the social and class structure of society, which adapts itself to it with a varying force of resistance or retardation, are obviously the most fundamental questions which the study of political economy may serve to illuminate.

These basic issues of the classical theory of value were temporarily obscured by the well-nigh universal stability (and relative tranquillity) of the late Victorian period, when the self-propelled growth of economies governed by a multiplicity of inter-communicating markets without much conscious direction conveyed the impression to the generation of Marshall or Pantaleoni that the framework of the institutions of society had reached a state of perfection, or at least a state of auto-pilot flexibility where 'history' becomes a matter of the past, but is not part of the present.¹

Sraffa's main interest, ever since his student days, was to attempt to resolve the basic issues concerning the theory of value which the controversies of the nineteenth century left unresolved. At one extreme was the Ricardian School which regarded the expenditure of labour as the factor which alone confers 'value' on commodities. At the other end was the view originating from Quesnay and the French physiocrats, which regarded production as a circular process—according to them, the essence of economic activities is that commodities are produced out of commodities with the *aid* of labour, but labour can only be effective if the commodities are available in advance, so to speak, before labour is expended on them.

In the view of the French physiocrats, only agriculture is capable of producing a 'net product', or 'surplus'. Other economic activities are only capable of replacing out of new production the commodities which are consumed in the process of producing goods. However, Ricardian and post-Ricardian economics in effect assumed that *all* production yields a surplus—for it is the essence of all economic activities that the value of commodities created in a period exceeds the value of commodities consumed in their production, when both are measured in the same system of prices.

All commodities are produced out of commodities and labour; it is the ratio between the two which shows large variations, and

¹ It took the upheaval of the First World War to bring these beliefs on the end of 'history' to a conclusion.

the main problem has been that of finding the rule which makes proper allowance for differences in the relative commodity content in the cost of production of commodities. Smith and his followers, in advocating the labour theory of value, argued as if all commodities are ultimately resolvable into labour expended in the past, so that the value of any commodity depends on the sum of the directly and indirectly embodied labour which it contains. However, the problem of a 'labour embodied' theory of value has been that the cost of production of commodities (ignoring rent for this purpose) is made up of wages and profits; and though profits, in the classical view, are earned because wages are 'advanced' to labour, the profit component of the cost is not proportional to the wages component, as it necessarily would be if commodities exchanged in proportion to the amount of labour embodied in them.

Various authors sought various ways of dealing with this problem. Some, like Marx, declared that the 'true' value of commodities is their embodied labour content; however, under a capitalist system the 'exchange value' will differ from the 'true value' on account of the fact that the 'unpaid' part of the labour will weigh more heavily the longer the period for which the wage remained unpaid. Ricardo, while firmly adhering to the basic truth of the labour theory, was forced, in chapter I of the *Principles*, to introduce a series of qualifications explicitly, according to which the ratio of fixed to variable capital, and the unequal durability of fixed capital and the length of the period of production, enter as separate additional elements into the determination of values.

However, everyone was agreed that the fact that wages are 'advanced' to labour only creates complications (or distortions?) if the period of advance differs from one commodity to another. Hence the Marshallian notion that 'waiting' enters as an independent separate element, additional labour, in the determination of values.

This, however, does not provide a satisfactory solution since the relative costs of production of commodities will vary not only with the relative 'weights' of labour and waiting, but also with their relative remuneration—the rate of wages and of profits—which brings back the age-old argument about circularity, which haunted the theory of value since Adam Smith, of explaining prices by reference to other prices.¹

¹ The neo-classical answer to this problem is to postulate a production function in terms of Labour and Capital, and then show that the relative magnitude of the two uniquely determines the marginal rate of substitution

[footnote cont. on p. 634

Sraffa's interest in finding the solution to Ricardo's problem goes back to the 1920s, when, according to him, the actual propositions of his theory had taken shape, while particular parts, such as the notion of a standard commodity, the treatment of fixed capital as a case of 'joint production', and the distinction between 'basic' and 'non-basic' products, were added in the 1930s and the early forties. The systematic exposition of his ideas in his book,¹ in preparation since 1955, was put together out of a mass of old notes, adding little 'apart from filling gaps which had become apparent in the process'.²

Sraffa's solution to Ricardo's problem is through a hypothetical construction of a 'standard commodity'—a system of production in which different commodities are produced in exactly the same quantitative relationships as they are used in production—i.e. one in which the 'output structure' shows the same profile as the 'input structure'. After showing that there is a unique way of converting any actual system of production into a standard system by multiplying the actual intensities with which each process is used by certain co-efficients, which ensure that these adjusted intensities are those which (jointly) reproduce the different commodities in exactly the same proportion in which they were consumed in the production processes of the current period, he goes on to show that (a) there is a unique system of relative prices which ensures the *same* rate of profit on all processes of production, but a different system for each particular rate of profit, between zero and a certain maximum (the latter being identical with the ratio of the 'net product' to be the value of the means of production, calculated at the same prices); and (b) while a particular system of prices thus uniquely determines the share of wages and profits in the net product of the economy, their relationship will only hold at a particular rate of profit, and the latter cannot be determined by the system of production itself. Hence the rate of profit must be given exogenously in order to determine the distribution between wages and profits correspond-

between them. However, this presumes that there is an unambiguous way of expressing all the different commodities used in production in terms of a single quantity, the magnitude of which is independent of the ratio of wages and profits. As Sraffa demonstrates, the aggregate value of a given collection of goods, priced at their costs of production, necessarily varies with the ratio of profits.

¹ *Production of Commodities by Means of Commodities—Prelude to a Critique of Economic Theory* (Cambridge University Press, 1960), xii + 95 pp.

² *Ibid.*, p. vi.

ing to any given system of production, which means that the quantity of labour embodied in each commodity, and the general rate of profits emerge as two independent 'co-determinates' of the system of prices and of the share of wages and profits in the economy. The labour theory of value of Adam Smith and Ricardo then emerge as a special case which is only valid with a zero rate of profit, but which sets the standard to which the actual values of commodities will approximate in inverse proportion to the rate of profit.

The main conclusion which emerges from Sraffa's analysis is therefore that any given system of production has a unique system of prices attached to it, at which alone the rate of profit will be the same in all employment of capital (which is a necessary condition for the system to be in a 'self-replacing state'), but that system of prices will itself vary with, and hence be related to, the rate of profit. Hence the latter cannot be *derived* from the system of production relationships, but must be given exogenously; contrary to the tenets of neo-classical theory (and to a certain extent also of classical theory), the prevailing system of distribution is not determined by the production relationships.

However, Sraffa does not consider the *output composition* of the net product (other than in the case of the standard commodity where it is by definition the same as the input composition of production), and whether it is systematically related to the distribution of income between wages and profits. If the assumption is made that wages are mainly 'spent on' (or represented by) consumption goods, and profits are mainly 'spent on' (or represented by) capital (or investment) goods, the division of the net product between consumption goods and investment goods will be in a unique functional relationship to its distribution between wages and profits.

Hence the indeterminateness of the profit/wage ratio disappears if one assumes that the growth rate, or the rate of capital accumulation (which is functionally related to the growth rate) is given, since this determines the distribution of net output between consumption goods and capital goods.

Sraffa's analysis thus demonstrates that in a market economy at least one element must be assumed to be exogenously given, in order to determine the system of prices and of distribution. In Sraffa's view it is the rate of profit in the economy, but we could equally take the growth rate, or the rate of capital accumulation, as the exogenously given factor, or else the profit/wage ratio itself. What we cannot do is to follow orthodox neo-classical theory

and derive the growth rate from the rate of capital accumulation, and the latter from the savings ratio of the economy as determined by the profit/wages ratio, since the latter itself is indeterminate without knowing what the growth rate is.¹

Sraffa explicitly restricts the scope of his book to exploring the inherent properties of an economy in a 'self-replacing state' (where, in other words, at the end of each reproduction cycle the same collection of goods are available as in the previous period). The economic systems of the real world are not in a 'self-replacing state', since they make use of commodities which are irreplaceable, i.e. the minerals of the earth. However, this does not make economies 'not-viable'² since human knowledge and technology are not constant, and technical progress—which could best be described as the continued invention of both new processes and new commodities—serves to compensate, or more than compensate, for the gradual depletion of minerals.

It is legitimate at the first level of abstraction to ignore technological change and to treat the methods of production as given and unchanging over time. The limitations imposed by these abstractions must however be borne in mind when interpreting the results of the 'model'.

Whatever view one takes of the importance of Sraffa's book considered as a new theory of value on classical lines, there can be no doubt of his achievement as a critique of existing theory. His demonstration that the solution of the production equations leaves one degree of freedom so that the process of equilibrium reproduction is consistent with differing divisions of the net product between profits and wages for any particular net to gross product ratio is an important result which contradicts the most frequently emphasized implication of existing theories, according to which relative 'factor endowments' determine 'factor prices'. And his demonstration that the system of prices will deviate from those given by the labour theory of value at any particular rate of profit higher than zero in a precise and predictable manner is a considerable advance on Marx's theory of the difference between values and 'production prices' depending on the ratio of fixed to

¹ The classical assumption of the Stationary State is thus a particular case with a growth rate of zero. Although this latter is consistent with a zero profit rate, and the whole of the net amount accruing as wages, it does not necessarily imply these results, since the 'consumption function' of profit receivers may include a positive constant term, which would generate a positive share of profits, even though the share of investment in output was zero.

² *Op. cit.* in n. 1, p. 634, pp. 5 ff.

variable capital. His model is closest perhaps to von Neumann's. It is more comprehensive in that it considers the problem of variations in the division of the product which von Neumann excludes by assuming that wages are exogenously determined at the subsistence level, and the whole of the remaining product is devoted to accumulation.

The exciting thing about Sraffa's book is that it 'grows on one' with the passage of time. It appears from a distance of twenty-four years as a unique achievement of post-war theoretical literature.¹ The slowness of the recognition of its importance was partly the consequence of its extremely terse style, which, though logically precise, makes no allowance for the reader's difficulties of comprehension. But it is partly due also to a basic uncertainty of the intention of the author—how far his intention was to provide a fundamental critique of economic theory in general, and how far to provide a new synthesis of the work of the French physiocrats and of the classical economics of Ricardo and Marx in laying bare the basic properties of a capitalist economic system.

NICHOLAS KALDOR

¹ When it first appeared some of the reviewers (*e.g.* R. E. Quandt, *Journal of Political Economy*, lxi (1961), 500, and M. W. Reder, *American Economic Review*, li (1961), 688-95) suggested that it contained nothing that was not known already.

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- (3) 'The Bank Crisis in Italy', *Economic Journal*, xxxii (1922), 178-97; Italian translation in *Fabbrica e Stato*, iii, nos. 15-16 (July-December 1975), 7-29, reprinted in F. Cesarini and M. Onado (eds.), *Struttura e stabilità del sistema finanziario* (Bologna: Il Mulino, 1979), pp. 189-207; and in G. Martinengo and C. Padoan (eds.), *Le crisi finanziarie* (Bologna: Il Mulino, 1985), pp. 109-26.
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¹ This bibliography was prepared by Professor Alessandro Roncaglia of the Institute of Economics at the University of Rome.

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- (22) Short discussion paper sent to Keynes, dated 9 May 1931, and published in J. M. Keynes, *Collected Writings*, ed. D. Moggridge, xiii (London: Macmillan, 1973), 207-9.
- (23) Letter to Keynes, 6 June 1926, in A. Roncaglia, *Sraffa and the Theory of Prices* (ed. J. Kregel, New York: Wiley, 1978), pp. 11-13 (original Italian edition, Roma: Laterza, 1975, pp. 17-21; Japanese translation, Tokyo: Nihon Keizai Shimbun, 1977; Spanish translation, Madrid: Piramide, 1980).
- (24) Short note to Keynes, undated, in J. M. Keynes, *Collected Writings*, ed. D. Moggridge, xxix (London: Macmillan, 1979), 157.
- (25) Seven letters to Tatiana Schucht (Antonio Gramsci's sister-in-law), dated 23.8.1931, 30.8.1931, 9.9.1931, 2.10.1931, 15.2.1933, 9.9.1937, 18.9.1937, in *Rinascita*, xliii, n. 4 (1 February 1986), 41-2.
- Note.* Spanish translation of nn. 1-21 by M. Ahijado, as *Los trabajos analíticos de Sraffa and Trabajos varios de Piero Sraffa* (Madrid: Departamento de Teoría Económica, UNED, April 1984). Discussion Papers nn. 17 and 18.