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Introduction to the volume

*Production, Distribution and Trade: Alternative Perspectives.
Essays in honour of Sergio Parrinello.*

Edited by

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1. The context

This collection of essays is a tribute to the academic career of Sergio Parrinello¹, a scholar whose research has focused in particular on the strand of Neo-Ricardian and Post-Keynesian studies as developed in Italy in the 1960s, influenced by the post-war debate between the two Cambridge schools on the theory of capital and distribution.² Unlike other young scholars of the time, as a graduate from a peripheral university no opportunity came his way for a scholarship for specialisation in a university abroad, such as the University of Cambridge, accorded the greatest favour at the time.³ Thus the early years of his postgraduate education continued in the same university where he had taken his degree.

The 1960s saw great ferment in theoretical research. There was a distinct perception in much of Italy's academic world that, subsequent to cogent criticism of the Cambridge school, certain of the foundations of neoclassical economic theory now had to be replaced with material produced in the new field of "classical" economics. The demolition, the *pars destruens* of criticism, was to be followed by the *pars costruens* (Sylos Labini 1973).

In many areas of research, reconstruction was awaited on the basis of the new, scant but fundamental, material produced. The aim was to build a new theoretical "paradigm" to contrast the neoclassical model at all its various levels, from theory to applications and economic policies.

As we know, this ferment did not lead to the results expected - the eagerly awaited reconstruction of political economy on non-neoclassical foundations.

By the mid-1970s the scene was already changing and the typically "Sraffian" components dropped away: the wind of research was blowing in another direction. The causes were manifold, some extraneous to the discipline. But the sluggish approach to the original themes of research, to shaping the "core", the founding propositions, the aptitude for exegesis of the texts and criticism, resulted in ever-increasing distance from the goal of the *pars costruens*.⁴

In this state of affairs Sergio Parrinello took on a singular role. He was one of the few scholars of the second⁵ "generation" to dedicate almost all his research activity to extending the original founding "core" of the new paradigm, demonstrating its flexibility in absorbing, in different forms and with new significance, themes and theories discussed solely with the new classical paradigm or applying analytic tools typical of that paradigm.

In the language of Lakatos, it may reasonably be argued that Parrinello strove to produce and organise part of those "auxiliary theories" that are fundamental to render a new paradigm acceptable

and power its circulation within a community of scholars. His was a somewhat solitary labour, much like that of an explorer who discovers new lands and makes them known by tracing out conceptual maps. He may have developed this aptitude through having, in his early years of (self) tutoring,⁶ undergone the influence of the Cambridge school only at a mediated level⁷ and shown a degree of resistance to certain dogmas that immediately arose in that school and that subsequently held many of the adherents back from straying out of that familiar territory. He had retained the curiosity of his early years and the freedom to strike out in new directions, albeit within the terms of the same paradigm, without being restrained by the fear of sliding into syncretism.⁸ Some bricks were missing from the paradigm being built, limiting its interpretative scope *vis-à-vis* the neoclassical scheme – the role of demand, of expectations – and on these he has worked over time. His efforts have focused not only on broadening the limits of the new paradigm, but also on the critical reappraisal of certain “struts” including, for example, the precise nature of the concept of equilibrium contained in “long-period position”.

2. The background

Parrinello’s early contributions reflect the major lines of research of the time. He addressed them applying the most advanced analytic methods – activity analysis, linear programming, input-output ([1], [2]). The third work [3] is of particular interest for the subsequent developments in the course of his research. Here reference becomes explicit to a classical economic growth scheme, albeit more Marxian in conception than explicitly Sraffian. The article, *inter alia*, contains a critical discussion of the then recent Pasinetti model with vertically integrated sectors. He grasp with clear insight the essentially normative nature of “how it must be” rather than “how it is” in accounting for the nature of the full employment assumption. Setting the “rank condition” is a technical artifice that allows for full employment dynamic equilibrium but deprives the model of the capacity to interpret a capitalistic growing economy. This criticism was developed in depth in a subsequent work [5] which was not published but circulated “underground”.⁹

A note on the theories of induced inventions [4] was followed by a co-authored article [6] on the criteria for choice in investments in research. In the part he authored, Parrinello provided a critique of the aggregate growth models in vogue at the time, and the associated notion of productivity. He also set out the reasons for moving on to a more disaggregated approach. Furthermore, he offered a critical discussion of the international trade models utilised in a context of growth, and his incisive criticisms anticipated developments in the neo-Ricardian models of international trade that were to come.

His contribution [7] on the relationship between “objective” prices and growth out of equilibrium completed and closed the preparatory stage in the construction of the “new” theories inside the Classical-Ricardian paradigm. In this work he returned to discussion of the Pasinetti model, examining the function of the vertically integrated sectors in the models of non-balanced growth and inquiring into which restrictive hypotheses, the principal one being the shortsightedness of the entrepreneurs’ expectations, must be placed in order to be able to determine the “objective”

prices independently of the demand conditions during the traverse process. So he raises some doubts about the adequacy of the “Sraffian” theory of prices to interpret situations of non-equilibrium dynamics. Thus arises the interpretative and analytic problem of whether, and if so how, to introduce some model of non-shortsighted expectations violating the nature of the equilibrium in the system of prices in the “classical” approach. This was to become a recurrent concern, tackled with successive approximations but never finally settled in many of his subsequent writings.

The following years saw the birth of the “constructive” theories: “international trade”, “exhaustible resources”, “institutions” and “non-material goods”. At the same time certain fundamental elements of the paradigm were being conceptually enhanced and refined: the composition of demand and its relation with the price system, uncertainty, market forms, and the role of returns to scale. However, significant and in many cases innovative contributions were to appear, touching on the paradigm or in culturally contiguous areas of research on the concept of equilibrium in economics, for example, on post-Keynesian theory, and on the history of economic thought and analysis. Last but not least, there were also contributions in the didactic field, in criticism within the field of welfare economics and, in the early 1970s, contributions in both theoretical and applied areas regarding socialist economies.¹⁰

Sergio Parrinello published contributions in Italian emerging from his first fifteen years of research in the major Italian academic economic journals. This was very much the common practice of the time, but it did mean only limited circulation¹¹ for certain of his fundamental contributions, reaching only the very few economists who could read Italian in the Anglo-Saxon world. Subsequently his publications were written in English¹² and the main lines of his research thus received recognition abroad among scholars taking neo-Ricardian, post-Keynesian approaches, or at any rate critical of neoclassical theory.

In the following section we will look into two “constructive” theories of the neo-Ricardian paradigm associated in their entirety or in part with his name. We will then go on to consider the essence of various other writings of his on the subject of institutions, the production of material goods and the composition of demand within the neo-Ricardian scheme of determination of relative prices, as well as offering some remarks on matters of theory, method and overall evaluation of Sraffian economics. To conclude, we will outline the important role played by Parrinello as founder and organiser of the Trieste Summer School and in the management of *Metroeconomica*, first as co-editor and subsequently as managing editor for about thirty years. (From 1967 to 1982 as assistant and subsequently co-editor, and from 1983 to 1997 as managing editor).

3 The “constructive” theories

3.1 Foreign Trade

Sergio Parrinello published the first article [8] on extension to the open economy of the Sraffian model.¹³ In this article the exposition and method of analysis showed considerable influence of the lesson to be drawn from activity analysis and linear programming. The starting point is a scheme of general equilibrium which is not neoclassical because certain hypotheses are introduced including

positive wages with labour unemployment and the absence of a theory of demand, simply taken to be given.

Balanced growth is assumed for the whole of the international economy. The concept of “return of specialisation” is defined as explicit extension of the technology choice problem of the closed economy, and proof is offered that the wage-profit frontier of an open economy is not always necessarily decreasing, the result depending on the choice of numeraire. The analytic novelty of the neo-Ricardian approach lies in specification of the criterion to measure the advantage or disadvantage of an economy in transition from autarky to international trade, which takes form in the comparison between two growth rate-wage curves one of autarky, the other of openness to foreign trade.

It was not until some years later that explicit expression was given to the awareness that such systems *à la* Sraffa amount to theorisation of an observable system of production of goods operating in a historical time that has already reached a non-momentary equilibrium of its own, also in terms of quantity. In a few words, this is a contribution which, on the basis of the critical developments contained in the *Production of Commodities* lays the alternative analytic foundations on the basis of which the principal propositions of the neoclassical theory of international trade are called into question.

In the following work ([10], [16]) Parrinello rewrote the Ricardian theory of trade and comparative advantage. As with the method adopted in the first work, equilibrium (accounting) conditions are set and from them are drawn constraints on the variables in order to arrive at an economically significant solution. This is practically a normative approach: once the parameters are established a relation of equilibrium is set between the significant variables, some given, others adjustable. The variables left endogenous are determined by the accounting relation of system consistency. There is continual reference to competition as the institutional mechanism implying a cost minimising behaviour of the classical type which, if not obstructed, brings the endogenous variables to the accounting equilibrium which is subsequently interpreted as long period position. The subsequent, fruitless debate on gravitation serves to point out that there is, indeed, a “problem” in this approach. Significantly enough, many years later Parrinello began to investigate other notions of equilibrium and the various mechanisms that bring it about ([40], [45], [60]).

The model provides solutions for productive specialisation between the two countries in relation to the real wages in each of them. The specialisation chosen is that which affords one country or both the highest growth rate. The relative size of the countries, the large and the small, is determined endogenously. On the basis of the hypothesised propensity to save, it is possible to deduce the rates of profit in each country. The value system and the quantity system are thus linked up. It is demonstrated that opening up to trade is not always profitable for all the countries or for all the social classes within each country. Adjusting the model to neoclassical hypotheses, Parrinello formulated an analytic critique of Heckscher-Ohlin’s theorem enlarging upon the findings already arrived at for the closed and open economy.¹⁴ The contribution [10] appeared in English, in a version only slightly modified [16], in a volume of essays on international trade (Steedman 1979).

Apart from a valuable introduction [13] to the first of the five *Essays on some unsettled questions of political economy* by J. S. Mill, it would be some years before Parrinello returned to the issue in an article published in JPKE [30]. Taking a non-technical approach he raised an issue that was only apparently a matter of the history of analysis. The question was whether the positions taken by Smith with the “productivity doctrine” and Ricardo with the “comparative costs doctrine” on foreign trade did in fact conflict with one another or whether, on the other hand, a certain complementarity between the two positions might be proved, the latter being the thesis to demonstrate. Returning to some propositions already advanced in [10] and [16], Parrinello argued that Ricardo’s theory of comparative costs was compatible with various hypotheses on returns to scale, was not associated with full labour employment equilibria, and that the gains from trade were not to be interpreted as reallocation of given resources. On the strength of his interpretation, he was able to demonstrate the non-incompatibility of the theory of comparative costs with Smith's theory of the extension of markets. In any case the explicative scope of the Ricardian theory, as it is reinterpreted at textbook level, is limited by the assumptions of constant returns, but one factor of production, labour, and of perfect competition and full employment. The critical analysis which Parrinello formulates in this work leads to the conclusion that the “gains from trade” indicated by the original Ricardian model are at best only partial. The total effects of opening up to international trade must also include the impact of trade on the degree of utilisation of the productive capacity of the countries involved, and the lasting effect brought about by trade on technological change. In this way the theory of comparative costs can serve as a logical basis on which to graft the Keynesian principle of effective demand and the theories derived from the Smithian “vent-for-surplus” and “widening the extent of the market”.

In an article of 2001 published in 2002 [56] Parrinello turned his attention once again to international trade. The article consists of a brief critical review dealing in particular with the role of the institutional factors in the New Trade Theory (NTT),¹⁵ to point out a certain complementarity of the NTT with the neoclassical tradition. They have in common certain basic hypotheses, but the emphasis in the NTT is placed on increasing returns and imperfect competition. The institutional factors modify neither the method of analysis nor the structure of the traditional model; they only affect certain parameters. The main point of criticism is that, if explaining means predicting, the NTT models do not yield a general theorem serving to predict the pattern of trade on the evidence of given structural characteristics of the countries involved in trade. Instead of “causal relations”, the NTT models go no further than establishing correlations between the structural data and the endogenous variables. Thus, much as is the case with the theory of general equilibrium, in the NTT models the patterns of specialisation can take manifold forms starting from the same set of structural data. Parrinello argues that, in contrast with attempts applying the NTT, the institutional factors can easily be included in trade models that do not belong to the Walrasian tradition – models constructed along neo-Ricardian and neo-Marxist lines – given their open nature. A further point in the article, namely that globalisation is not necessarily favourable for all the countries involved in it, was taken up from the analytic viewpoint in a final contribution on trade [68]. With a very simple

version of the neo-Ricardian model, with fully mobile financial capital and labour unemployment, Parrinello demonstrates without any particularly restrictive assumptions that absolute productivity and advantages can prevail over relative productivity and comparative advantages in determining the pattern of specialisation to the point of delineating positions such that can exclude from international trade a country's productive sectors as a whole. Thus a theoretical basis is provided for explanation of the growth or decline of the countries involved in global trade. This is a further example of the capacity of the neo-Ricardian framework to endow insights or facts observable in the global arena with theoretical substance.

3.2 Exhaustible Natural Resources

Parrinello came to this topic rather later than the other neo-Ricardian economists. In 1982 he published in Italian the entry "Terra" (Land) in *Dizionario di Economia Politica* [20], a critical discussion of how the role of exhaustible natural resources had been dealt with by the neoclassical and neo-Ricardian authors. The other neo-Ricardian scholars¹⁶ had written on the subject of "land" starting from Sraffa's presentation in chapter XI of *Production of Commodities* and tracing out the foundations for subsequent reflection.

In 1983 the part of the entry *Terra* [20] dedicated to the neo-Ricardian approach appeared in English [23]. A foreword had been added to the original text on the role of natural resources as a limit to growth processes. Parrinello argued that the authors who had first analysed chapter XI of *Production of Commodities* had, erroneously, bundled together with the Sraffian "land" the exhaustible resources in general, such as mineral resources. This way of placing on the same plane "land" and exhaustible natural resources was, Parrinello believed, implicitly suggested by Sraffa himself. Here lay the novelty of Parrinello's text ([20], [23]) departing from the contributions that had so far appeared on chapter XI of *Production of Commodities*.¹⁷

As Parrinello saw it, in chapter XI Sraffa interpreted the coexistence of two methods of cultivation on pieces of land of the same quality as if it were the result of a process of decreasing productivity occurring historically within a model that finds no place among steady-state models.

He develops his analysis with an exhaustible natural resources (inventory) and the model determines the prices of the resource in the subsoil in two contiguous periods. The solution depends upon the temporal distribution of the exhaustible resource being known or governed by a long-period expectations model. The consequence is that the entire system of prices cannot be accounted for solely by the technology and distribution within the self-contained period of time; determination of the prices also comes to depend upon the quantity of natural resources in short supply. Thus a certain affinity emerges between the surplus approach and the neoclassical approach, but the affinity is limited since in the former the rate of profit, whose value is confined the technological limits, is the result of an incomplete theory of distribution whereas in the neoclassical approach the rate of interest is characterised as a rate of intertemporal preference.

The basic issue that Parrinello's exhaustible natural resources model highlights is whether the classical method of long-period positions is compatible with an excessively fast historical process

of decreasing productivity of an intensive or extensive nature associated with progressive exhaustion of natural resources yielding increasing rent. Sooner or later the scant resource is exhausted and some change in the productive methods becomes imperative. At the economic level, a system of long-period prices with a scant natural resource can persist if the changes in relative prices occurring as the resource dwindles are not anticipated.

Parrinello revised and enlarged his original model ([20], [23]) in a symposium on “Exhaustible Natural Resources and Sraffian Analysis” organised by Ian Steedman for *Metroeconomica* ([54]). He rewrote his model in such a way as to allow for structural change and determination of the price system in each of the periods preceding exhaustion of the natural resource, unlike the other similar models (Bidard and Erreygers, Kurz and Salvadori, Schefold all in the 2001 *Metroeconomica* Symposium) in which the price system solution, arrived at through “backward induction”, is made to depend upon a backstop technology known *a priori* in which “the future influences the past”. To obtain this result he sets a “rank condition” on the system establishing, from the economic point of view, that changes in the methods of production or in the rate of interest must be consistent with the revaluation of the exhaustible resource in each period at a rate equal to the current rate of interest. And again, changes in the quantities produced, even though exogenous, must not be arbitrary. Admittedly, these conditions cannot simply be assumed. However, following the constructive methodology of proof adopted by Sraffa in the *Production of Commodities*”, they can be interpreted as the result of an observed historical sequence, a moving equilibrium, in which the “given” quantities which structure the solution for prices together with technology are the result of the arbitrage between the real returns among various assets realized through the endogenous shifts of capitals. Actually the producers’ expectations do exert some weight, but only within each single period, and not extending to the prices of the following periods.

In a subsequent work, Parrinello ([59]), responding to the objections of some critics (Bidard and Erreygers 2002) who interpreted the “rank condition” of the “oil–corn” model solely as a mathematical constraint guaranteeing solution, abandoned the “rank condition” to replace it with the notion of “effectual supply” of the exhaustible natural resource. The fact was that the “rank condition” hid the variables that adjusted the system to the long-period position. For the solution of the model thus modified it is necessary for the “given” quantities of goods in each period to include also the exhaustible resource flow magnitude, the “effectual supply”, and not the entire stock of resource in the subsoil. The theory of “normal prices” functions perfectly in the modified model. Parrinello’s interpretation is that Sraffa’s system of given quantities represents theoretical reconstruction of a production system observable and at work. This in turn derives from the assumption that the production system is the outcome of the choice of profit maximisation in conditions of competition in a long-period context. The output accomplished is assumed to satisfy a given “effectual demand” or path of “effectual demand”. The given quantities of the Sraffian system of prices must now also satisfy a certain path of “effectual supply” of the exhaustible resource, the amount of which can reflect the behaviour of the investors in moving between various productive processes and the conservation process applied to the exhaustible resources to gain on the

difference between the rate of profit and the rate of appreciation of the exhaustible resource.

It is worth noting that, albeit indirectly, Parrinello's argumentation in his various contributions on the issue of "exhaustible natural resources" as a whole seems to hark back to the demonstrative method of an algorithmic nature followed by Sraffa in *Production of Commodities*, subsequently termed "constructive methodology" by Velupillai (1989, 2008).

4. Inside the neo-Ricardian "core" and other "constructive" theories

4.1 The long-period positions

A constant feature evident in the writings of Parrinello on natural resources but also cropping up in a great many of his contributions in the neo-Ricardian area is deliberation on the economic meaning of the specific notion of equilibrium, the "long-period positions" (LPPs),¹⁸ which supports the models of neo-Ricardian conception. This is the notion of equilibrium¹⁹ that would give economic meaning to the prices and distributive variables stemming from the solution of a system of apparently "accounting" relations.

Parrinello deals with the concept of equilibrium in many of his writings: reference is provided for twelve of them in a note 10). Even before 1970 he had addressed the topic in contributions [3], [5] and in particular [7]. The relations that seem, perhaps, to reflect his approach to the topic best are [40], [51] and [55].

In [40] Parrinello stepped in to defend the LPPs, but taking a line that enhanced their interpretative capacity. He succeeded in precisely identifying the pre-analytic conditions that endow LPP equilibrium with meaning and the type of adjustment that creates the possibility for convergence of market prices to normal prices or , at any rate, not systematic divergence. He analysed the positions of the critics who called for a completely dynamic approach to adjustment, highlighting the problematic aspects of these criticisms. He also drew attention to the risk that the specific analytic method proposed by the critics to "prove" the stability of long-period prices might deprive the very concept of LPPs of meaning, together with the underlying classical model. The path of adjustment would trace out a model of perfect disequilibrium, a sort of stable moving equilibrium, and the attractors, the LPP prices, would lose the role assigned to them by classical theory. There would be a risk of confusion between classical model and neoclassical model.

Parrinello's position is that "... the difference in the two rival theories of prices require also a different approach to the analysis of convergence and to the kind of empirical correlates on which each theory of prices must be founded." Thus he set about analysing the notion of the attractor, re-utilising the notions of statistical equilibrium,²⁰ the nature of expectations, the empirical correlates to the "normal states" and the role of random disturbances²¹ in defining the "fundamentals" of the normal states, arguing that all these aspects can usefully be incorporated into the classical-Sraffian model, reinforcing its foundations.

In a subsequent work [51] of markedly methodological conception which focused on the role of the normal states produced by the theory, seen as contrasting alternatives in explanation-interpretation of historical events, Parrinello returned to discussion of the meaning of normal prices

(LPP prices). He interpreted them explicitly as benchmarks produced by a specific theory.²² Thus the normal prices become a yardstick for the effective prices, seen as resulting from specific historical conditions. On the basis of a rule of correspondence between normal prices and effective prices, their divergence could be accounted for. For example, when temporary conditions of monopoly prevail in a specific sector the price in that sector diverges from the normal price associated with conditions of competition in [21]. This marked a step further in extending the interpretative capacity of the LPPs.

At the end of his contribution [55], consisting in valuable critical commentary on some essays contained in Kurz (2000), Parrinello seems to have accepted Garegnani's position of the two levels of analysis in definition of the equilibrium in the classical-Sraffian scheme: the system of prices, accounted for by the fundamental theory in which the quantities are given, postulated as necessary to avoid the trap of constant returns; the quantities, i.e. level and composition, of demand, accounted for by a separate theory showing a less abstract, more inductive approach than the theory of prices; and the suggestion that linkage and integration between the two levels of analysis may be reached through an iterative procedure on prices, quantities, prices and so forth. At the same time, however, he expressed regret that since the publication of *Production of Commodities* no contribution had appeared that adopted this promising procedure in various stages. Practically dismissing that theory and equilibrium as little more than “wishful thinking”, he noted that:

... the Sraffian side continue to develop the criticism of marginalism or they pertain to the history of economic thought. This attitude contrasts in some respects with the works of the Classics which are taken as a benchmark. The latter were actively concerned with applying their theories to the important economic problems of their own time. Ricardo and Marx, in particular, did not wait until the defects of the theory of value (of which they were indeed aware) were overcome before dealing with the problems of growth, innovation and distribution of the nineteenth century. ... (They) have only occasionally followed the Classics in trying to apply Sraffa's approach to the contemporary problems of growth, innovation, distribution and globalization. The reason for this different attitude can be traced back to the priority that they assign to the task of dismantling the consolidated neoclassical system on the basis of a pure theoretical and methodological criticism. It seems as if they were engaged in a sort of division of labour and as if they say: we have done our critical work and we are still doing it; others, perhaps more expert in the fields of historical studies and of non-economic social sciences, should make the rest of the work in order to explain the level and the structure of economic activity and the evolution of these phenomena relative to historically determined factors. But why does such a second field of enquiry not emerge in a complementary way with the Sraffian theory of prices and the assumed methodology of Sraffa? This is a legitimate question 40 years after the publication of Sraffa's book. ... At the same time Sraffa's Legacy suggests why a theoretical controversy, not accompanied with a parallel development of a positive alternative theory of the economic process as a whole, can be stimulating indeed, but in a certain sense it leaves only losers and non-winners on the ground.²³

4.2 Other “constructive” theories

Parrinello has provided many more contributions extending the interpretative capacity of the Sraffian model. This constant endeavour to plant new seeds has not so far been consistently rewarded with the fruit of new contributions by other scholars along the lines traced out. This may be due to the greater aptitude of members of the Sraffian tribe, as previously noted, for critical rather than constructive work.

As early as 1982 he published an essay [21] pointing out the possible compatibility of a case of the productive process being performed in monopoly with the notion of long-period equilibrium. In doing so he demonstrated on the one hand the possibility of persistence in the differential between rates of profit and, on the other hand, the non-independence between system of prices and system of quantities insomuch as an individual producer can swell his profit through change in the level of demand for the commodity which he produces with change in the monopoly price.

The period 1981-84 saw no fewer than five ([18], [22], [24], [25], [26]) contributions from him dedicated to examination of the elements that determine the composition of demand, and to endogenous preferences and adaptive behaviours. His approach involved pointing out that the “individual tastes” that play a part in the formation of demand are still anchored to the system of production and the functions the individuals perform within it. At the analytic level, the aim is to show the influence of the system of production on demand which determine the “given” long-period equilibrium quantities.

Parrinello traced out another new path with a series of contributions – [29], [31], [35] and [39] – with the introduction of social norms into the Sraffian model. Unlike the traditional theory according to which the production technology is independent of the various institutional structures that govern the technology of trade, in the model proposed by Parrinello the choice of techniques is the joint result of technology conditions and the actual pattern of social norms. In a capitalist economy with competition, prevailing systems of production and system of negotiation will emerge that tend to minimise the overall costs of both production and trade.

In articles [36] and [43] he enters the notion of efficiency wage within the neo-Ricardian framework. In these articles we witness the endeavour to theorise inductively a factual situation, namely the existence of sectoral wage structures differing for similar work typologies.

In 1993 Parrinello published a work [42] introducing for the first time the distinction between “private goods” and “non pure private goods” within the Sraffian framework. Non-rival inputs are considered as possible origin of growing returns and analytic tool to extend neo-Ricardian theory beyond the limits of constant returns and find room within it also for “public goods”. As a partial extension of this work, in [44] and [47], Parrinello returned to one of the pillars of the neo-Ricardian “core”, namely part III of *Production of Commodities* on the choice of techniques. He demonstrates that the Sraffian method of choice of techniques is compatible only with locally constant returns, and that if the variable returns are allowed in associated with economies or diseconomies outside the firms, then the sequence of techniques introduced subsequent to an

increase in demand or under the effect of technological change can entail persistent adoption of inefficient techniques and a lower level of the endogenous distributive variable. In his analysis the existence of externalities on the side of production has significant social effects on the choice of techniques when the choice remains governed solely by minimisation of private costs.

In more recent years (2003-07), with a series of contributions ([57], [61], [64]) Parrinello opened a further new front for neo-Ricardian analysis, extending the original scheme to an economy that sees processes producing material goods and processes providing services working side-by-side.

One of the aims pursued in these works is to provide theoretical support for the thesis denying that *per se* the expansion of services and consequent apparent “dematerialisation” of the economy is associated with increasing generation and dissemination of knowledge. The statistical classification between production of commodities and production of services reflects the evolution in the organisation and division of labour, coming about through a continual decomposition and recomposition of processes in the production of services and intermediate goods. This “reshuffling” is not necessarily correlated with expansion of the knowledge economy which influences material and immaterial production without distinction. Goods and services are not rival products but complementary, and a new role of knowledge should therefore be duly divorced from the dichotomy between goods and services. Thanks to the innovative contents of the contributions listed above, with analytic distinction between processes producing goods (serial processes) and processes producing services (parallel processes), another way is opened within the neo-Ricardian logical framework for generalisation of the choice of techniques to theory of choice of techniques and organisation of the economy in terms of processes, firms and markets. One of the findings thus obtained is that a capitalist economy cannot be an economy of pure services.

4.3 Keynesian contributions

Sergio Parrinello has not confined his attention solely to issues within the classical theory of value and distribution, or issues that revolve about it. In the early 1970s he also wrote two theoretical contributions on the self-managed enterprise in the Yugoslav model ([9] and [11]) and an empirical contribution on EEC-COMECON trade [12], while the late 1980s saw a critical contribution [38] on the use of probabilities as a measure of uncertainty.

He also took part in the debate of the 1970s-1980s on reinterpretation of Keynes’s thought. His first contribution [14] took on the critique of overdetermination and the antithesis between causality and interdependence between the endogenous variables in the Keynesian model. His argument ran that criticism along these lines shifted attention from the true weaknesses of the model, which lie in the hypotheses of homogeneity of physical capital and labour, and the method of short-period general equilibria. Strict causality or interdependence are, he holds, of no real relevance as means to account for the principle of effective demand. What is indispensable, on the other hand, is that there be a monetary economy, uncertainty, separation between investment decisions and saving decisions and the role of income as adjustment variable.

In contributions [17] and [19] Parrinello raises the question as to which prices and which quantities are implicit in the aggregate demand function as defined in chapter 3 of the *General Theory*, and which are the microeconomic foundations underlying the point of intersection between aggregate supply and demand. He argues that effective demand is an expected magnitude consisting in the compound product of price and quantity. The expectations apply to positions of equilibrium in which a certain amount of product and a level of prices are implicit. The classical method of equilibrium taken as a centre of gravity thus appears compatible with Keynesian methodology if equilibrium is understood in terms of equilibrium of equilibrium expectations.

Analytical investigation of effective demand continues in [28] and [37]. Parrinello sets the principle of effective demand back on Marshallian microeconomic bases and points out that the method adopted by Keynes in chapter 3 of the *General Theory* is in fact a hybrid obtained by superimposing on Marshall's static analysis of equilibrium a dynamic analysis of the adjustment process.

5. Sergio Parrinello: scientific organiser

5.1 The Trieste Summer School²⁴

Sergio Parrinello has not only produced theoretical innovations and traced out new paths in the area of the neo-Ricardian paradigm, but has also shown unflinching zeal as an organiser of scientific events. The "Trieste Summer School"²⁵ is among the fruits of these activities.

As a venture at the international level, the "Trieste Summer School" is virtually unique of its kind. It sees between twenty to forty scholars (depending on the year) of Sraffian and post-Keynesian inspiration – the great twofold core of the Cambridge tradition – coming together from many and varied major centres of culture and learning in a score of different countries to spend ten days teaching and discussing with between thirty and fifty students, young university researchers.

The school pursued two principal aims. The first was to promote debate among exponents of the two theoretical strands to investigate the extent to which Keynesian analysis of effective demand in a monetary production economy can be integrated with revival of classical economics along Sraffian lines. An important aspect of the debate [32] lay in verifying whether the theoretical "facts" of the two strands have the capacity to interpret the facts of the real economy and the contingent problems of economic policy, applying also to countries with various levels of development. With this approach there was no risk of debate being confined solely to comparison of the terms of the two research programmes. The "theories" came under discussion on the plane of empirical interpretations, also in relation to those deriving from traditional theory. The debate did not lead to the two strands, the post-Keynesian and neo-Ricardian programmes, being woven into one. As Parrinello saw it [32], their incompatibility lies in the "concept of uncertainty and the way of theorising a world in which individuals act in conditions of uncertainty. (...) Clearly, it follows that, while Keynesian criticism of the tradition of economy focuses on the role of uncertainty, the criticism of the theoreticians of surplus revolves around a theory of capital that has nothing to do with the existence of uncertainty."

The debate did, nevertheless, bear fruits in the articles and conference proceedings produced (in particular Kregel 1983).

The second objective of the school was to stimulate and disseminate ideas, and generate interaction international groups of young scholars interested in heterodox approaches to political economy. His purpose was achieved to the full, and young scholars from peripheral countries who would otherwise have worked in isolation joined in with interpersonal circuits of great utility for their future research work. Many have gone on to successful careers in academia and other fields.

About halfway through the school's decade of activity, the debate between post-Keynesians and neo-Ricardians reached the stage of decreasing returns. The question arose as to whether the School of Trieste was to be transformed from an arena for comparison and contrast to a school of thought, be it post-Keynesian or neo-Ricardian, or indeed open up to other theoretical approaches that could fertilise both the didactic activity and the debate with new ideas. Urged by certain members of the Summer School who took a critical line on the less robust aspects of the two strands of thought, the choice fell on opening up to new influences. As from 1985²⁶, alongside the post-Keynesian and neo-Ricardian positions other approaches critical of neoclassical theory, like the evolutionist and institutionalist approaches, found room in both the teaching and the internal debate.

5.2 *Metroeconomica*

The name of Sergio Parrinello is associated with the name of a journal, *Metroeconomica*, whose official editor he was for fifteen years, having for the previous fifteen years been co-editor and assistant editor, amounting to thirty years of editorial responsibility. *Metroeconomica*²⁷ was founded in 1949 by Eraldo Fossati²⁸, who then held the chair of Political Economy at Trieste²⁹. In the editorial of the first issue of the journal it was proclaimed that the founding members were “bound together by a tie of adhesion to the econometrical principle” and that the title of the journal had been conceived “to fix and explain its aim as well its method”. *Metroeconomica*, it was stressed, is “open to every scholar, who appreciates the quantitative reach of economic science to its full value”. The most important economists of the day sat on the editorial board: to begin with C. Bresciani-Turroni, L. Dupriez, R. Frisch, G. Lutfalla, A. Marget, U. Papi, E. Schneider, J. Tinbergen, G. Tintner and F. Zeuthen, and later on R. Roy, W. Leontief, J. Marschak and G. L. S. Shackle.

In the first ten years of activity it published theoretical articles by G. Debreu, K. Arrow, M. Allais, R. Roy, M. Morishima, H. Nikaido, T. Negishi, D. Patinkin, G.L.S. Shackle and R. Frish. Later on contributions also came from F. Hahn, R. Kuenne and P. Newman. Further important contributions were in the sphere of econometrics and applied research. The most renowned authors included R. Frisch, J. Tinbergen, G. Tintner and H. Theil.

As from 1962 editorship was taken over by Manlio Resta, with no change to the editorial line. This period saw a burgeoning of studies on growth models. The journal accepted neoclassical contributions as well as contributions running on the lines traced out by von Neumann. The authors included L. McKenzie, K. Shell, D. Levhari, K. I. Inada, K. Kurikara, A. Takayama, M. Shubik and

many others. The early 1970s saw contributions by Kamien and Schwartz, Diewert and Takayama. Most of the contributions still belonged to “mainstream economics”, but the occasional “Sraffian” articles began to appear, like the articles by L. Pasinetti on vertical integration and B. Schefold on fixed capital.

Close as he was to Resta, Sergio Parrinello found himself directly drawn into the atmosphere of his contributions and, as from 1967, worked alongside Resta in running the journal, first as assistant editor and subsequently, as he advanced in his academic career in Italy, as co-editor. By now Parrinello’s unique “classical-Ricardian” leaning had found full expression through his writings. The editorial line of the journal was about to change direction while, in keeping with its tradition, continuing to favour contributions of particular rigorousness in terms of analytic tools. It was the contents that changed. As from the beginning of the 1980s Parrinello accorded ever more room to contributions along neo-Ricardian lines (including, among many others, articles by I. Steedman, S. Metcalfe, N. Salvadori, L. Mainwaring and P. Garegnani). In 1983 Parrinello took over sole editorship of *Metroeconomica*. The 1980s were also the years that saw the School of Trieste. *Metroeconomica* opened up an increasing number of pages to “mainstream” critical contributions, reflecting the debates that were held with the annual Summer Schools. Various contributions appeared by leading post-Keynesian exponents including S. Weintraub, T. Asimakopulos and H. Minsky, in addition to the flow of contributions following the diverse neo-Ricardian strands. The journal progressively extended its range to take in other mainstream critical contributions including articles of evolutionist and institutionalist inspiration.

A new phase, with a number of co-editors now working alongside the editor, began in 1998. The volume of that year was introduced by an Editorial that drew an end to one period and set out to open a new one. Many of the remarks contained therein faithfully reflected the positions that Parrinello had arrived at *vis-à-vis* the “critical” theories in the course of the School of Trieste debates. It begins by proclaiming that “Economic theory is in a state of flux”; neoclassical theory was multifarious and many other theories clashed with it mostly on specific issues, but as yet there was no “alternative” theory. The editors deemed that in this state of affairs “the present debate among conflicting ideas and theories should be encouraged and their supporters should be offered an appropriate international forum”. Parrinello’s attitude emerged clearly and boldly as he asserted that

those economists who disagree with the dominant doctrines have insisted too much on purely methodological and critical arguments. This line of action soon reached diminishing returns to effort, and we believe that critical arguments are far stronger when they open the way to constructive suggestions, leading to more satisfactory explanations of relevant economic questions and more reliable predictions of economic facts.

This was same position that he took in a critical comment [32] on experience with the School of Trieste. Looking forward to more positive developments he insisted

Furthermore, we would hope to publish works trying to incorporate into economic analysis the role of institutions, beyond the traditional emphasis on markets alone. This, by the way, might give the system greater structure and reduce the degree of indeterminateness in the economic agent's behaviour.

This is part of the research programme that Parrinello was conducting in his field.

To extend the range of contributions accepted by *Metroeconomica* in the following years, Parrinello opted for an active editorial policy, not simply waiting for material to arrive. He encouraged contributions that he held to be interesting, and organised conferences (1991, Production Organization, Efficiency and Social Norms) and workshops (1993, The notion of competition and cooperation in economics; 1995, Theoretical bases for employment increasing policies) which bore fruit in special issues of the journal while drawing further articles from yet more scholars.

In keeping with his penchant for dialogue and keen interest in "other" theories, Parrinello decided to open up the board of editors to the major exponents of the alternative theoretical approaches, in 1989 taking B. Schefold and I. Steedman on board, in 1992 R. Arena, D. Foley, H. Kurz and N. Salvadori. Subsequently he took on A. Bhaduri, A. K. Dutt, R. Frenke, W. Guth, H. Hosoda and S. Metcalfe, and in the space of a few years he had brought the board back to the sanguine conditions it had enjoyed in the first years of the life of the journal.

At the beginning of the 1990s Parrinello's great editorial endeavours came up against a bottleneck in a system of circulation no longer adequate to the reputation acquired.³⁰ At the end of 1992 *Metroeconomica* became a journal of Blackwell Publishers entailing a great boost to its circulation and prestige.

At the end of 1997, after thirty years of direct editorial responsibility, in the knowledge of having carried out an enormous task, as the journal was entering into its fiftieth year of life Parrinello deemed that the time had come to bow out to a new managing editor; the board called on Heinz Kurz, who is still editing *Metroeconomica*³¹ with undiminished enthusiasm.

6. The organization of the volume and the contributions

The contributions collected in the volume reflect in their various ways the scientific interests that Sergio Parrinello has cultivated during his career.

6.1 Analytical issues in production and exchange theory

The first section, consists of nine contributions which can be grouped within three broad fields.

The first three are highly technical. Eiji Hosoda discusses a specific issue of production diseconomy, looking into the introduction of processes for the abatement and recycling of the bads of production processes in a linear model with linked production, examining its conditions of reproducibility when specific constraints apply on the use of manufacturing residuals. Ian Steedman

demonstrates that the assumption of the quasi-concavity of preferences applied to the characteristics does not necessarily transfer to the preferences derived from the goods. This casts serious doubts on the standard assumption of quasi-concavity for the curves of indifference in consumer theory. Duncan Foley analyses the results of a model of trade with disequilibrium prices or without recontracting, applying Edgeworth box construction, and demonstrates that agents of the same type can arrive at different final consumption baskets although they have the same final supply prices.

The second group contains four contributions that address, in the case of the first two, aspects of capital theory from a Sraffian viewpoint and, the second two, critical appraisal of the relevance of the category of studies harking back to *Production of Commodities*.

Pierangelo Garegnani analyses the shortcomings of the concept of “quantity of capital” which led the Hicks of *Value and Capital* to adopt a Walrasian representation of capital as physical vector of factors. In the neoclassical theory this representation became dominant only three decades later, when the final conclusions of the controversy of the 1960s on capital proved the absolute unsustainability at the level of pure theory of the notion of capital as a single magnitude. In more recent years, however, capital taken as a ‘single commodity’ once again found a basic role in the saving-investment process associated with determination of distribution in terms of factor substitution.

Heinz Kurz and Neri Salvadori return to the topic of heterogeneous capital taking their cue from chapter 21, 'The marginal equalities', of C. Bidard's *Prices, Reproduction, Scarcity*. They insist with reference to P.H. Wicksteed, who is cited by Sraffa (1960, pp. v-vi), that one ought to be careful in distinguishing between "spurious margins" and the "genuine thing", and that a careless use of the term "marginal" is a source of "dire confusion". They stress, contrary to Bidard, that the finding of an equality between the rate of profits and the marginal productivity of capital, appropriately defined, implies nothing whatsoever as regards the determination of the level of the rate of profits. “Marginal equalities” must not be mistaken for substantive explanations of economic phenomena, that is, they must not be taken for the “genuine article”.

Lynn Mainwaring raises the question as to whether Sraffian theory could serve as a guide for policymakers tackling the problems of the contemporary world, to come up with a negative answer because the “objective” nature of the classical theory, perfectly suited to addressing problems of “long-period analysis”, implies a marginal role for “individual or social behaviours”, while many of the problems of the contemporary world arise on account of the ways individuals and organisations respond to rapid changes. Guglielmo Chiodi and Leonardo Ditta concur to some extent with Mainwaring's thesis but reject his pessimistic conclusions because, following the drift of a contribution by Parrinello himself, they argue that there is in fact a practicable way out from the problems posed by Mainwaring.

The third group consists of two contributions, both on the pure theory of international trade. Stan Metcalfe outlines an evolutionary theory of international trade linking the changeable structure of distribution of the production at the worldwide level to changes in the pattern of world trade. A static theory of comparative advantages is of little use in such a context. In its place we have a

theory of comparative advantages taken as a dynamic process in which the “patterns of trade” are the result of the different dynamics of production and consumption. Takao Fujimoto presents a linear model with linked production and heterogeneous labour in which he analyses the connection between labour value and prices with an extension to unequal trade between countries.

6.2 Post-Keynesian Macroeconomics

The second section contains six contributions: the first three set out in their various ways to interpret the present crisis, while the second three address basic aspects of post-Keynesian economic theory.

Amit Bhaduri constructs a model on the basis of which is able to analyse the connection between the financial sector and the real sector in the recent crisis. Given that the cultural background to the crisis consists in free-market monetarist ideology, the model explores the basic mechanism behind the fluctuation of debt and gains driven by opposing currents deriving from growth in demand supported by credit and growth in service on the accumulated debt.

Claudio Gnesutta analyses the effects of redistribution of the financial risk on the trend in gains on the basis of a given financial structure which is the product of the rules adopted. The author demonstrates that advanced financial systems do not in themselves constitute a guarantee of efficient allocation of financial assets in support of the stable growth of productive capital.

Jan Kregel analyses the “Triffin paradox” and suggests that a similar dilemma is implicit in the present form of globalisation of the international financial and trade system. Recent developments suggest that the doubts about the sustainability of the system were not misplaced.

In his contribution Massimo Pivetti compares the relationship between monetary interest rate and the general level of prices as taken in “inflation targeting” theory, on the one hand, and in monetary distribution theory on the other hand, with interesting implications.

Amitava Dutt introduces two characteristics into a Harrodian model and a Kalecki-Steindl model. The first is the existence of bands within which the agents cannot change their type behaviour, while the second states that the agents react in more than one way to a particular disequilibrium. The author demonstrates that not only is path dependence generated with the introduction of these characteristics but also new elements emerge to meet certain criticisms of this model typology.

Ed Nell’s contribution closes the second section. He discusses the circulation of “real and fiat money” in new economies in which the bank system and government operate, distinguishing two different sorts of impact of demand on the economy – with either essentially an effect on prices, or an effect on quantities. In the former case we have “flex-price” economies, in the latter “fix-price” economies, which are adjusted through the multiplier. The different result in terms of demand variation is accounted for by the different technological and cost structures. Nell demonstrates that “real money” functions effectively in a “flex-price” system but generates recession in a “fix-price” system. On the other hand, “fiat money” would destabilise a “flex-price” system because it tends to generate inflation, although it is appropriate for a “fix-price” system.

6.3 History of Economic Thought and Methodology

The third section in the volume, contains four contributions. Two deal with the history of thought and two with appraisal of research in economics, the latter being an issue that Sergio Parrinello has recently been involved in, attempts at an evaluation similar to the Research Assessment Exercise of the United Kingdom having also been undertaken in Italy.

The first contribution is by Alessandro Roncaglia, who looks into the origins of social inequality. After William Petty, he points out, it was Adam Smith who saw in the division of labour the source not only of growth in productivity but also of social stratification, between the classes and within the working classes. Roncaglia investigates as to whether social stratification is indeed a natural phenomenon, looking back to Plato and Aristotle, and on to Paul Samuelson. Smith's thesis is found to be in conflict with the conception that prevailed in classical antiquity and which also underlies the marginalist approach.

Bertram Schefold appraises the figure of the German economist J. H. Von Thünen, looking into the contents of his major works, and also offers some formalisations of his theory of value, adopting both a marginalist and a classical-Sraffian framework.

Grazia Ietto-Gillies opens her contribution with some serious criticisms of the evaluation system based on Peer Review, and goes on to propose an alternative system for assessment of academic work which she refers to as *ex-post bottom-up Peer Comments system*: an Open Access system which exploits the new information technologies and multiplies the possibilities for interaction between the members of the academic communities.

Adriano Birolo and Annalisa Rosselli present the findings of their research on a vast database containing the relevant information on the scientific characteristics of the three cohorts of assistant professors recruited in Italy in the early 1980s, the 1990s and the first few years of the new millennium. Their first objective is to trace out the scientific profile of the assistant professor in the early 1980s and the changes that came about in the following twenty-five years due to general changes in the profession and in the specific conditions of the Italian academic market. The second aim is to see what turn in direction the scientific standard has taken for access to a career as a young professor of economics, the number and typology of publications, the fields of research.

Closing this last section are two brief memoirs casting light on the cultural context that saw Sergio Parrinello's scientific progress grow to maturity. The first, by Flavio Pressacco, depicts Parrinello as professor at the University of Trieste, while the second, by Angelo Marzollo, illustrates the background to the launch of the happy venture of the Summer School of Trieste.

Acknowledgements

A great many people, colleagues and in some cases friends, have made this volume possible. In the first place, all those who agreed to contribute to it with their writings. A great deal of the merit for this volume goes to Nicola Acocella and Cristina Marcuzzo, who insisted so forcefully as eventually to persuade me that organising a collection of writings in honour of Sergio Parrinello was not outside my capabilities. Bertram Schefold, Heinz Kurz and Richard Arena succeeded in dispelling my remaining doubts.

Nicola Acocella and the editors shared with me the task of identifying possible contributors, while Nicola Acocella and I jointly undertook the invitations to contributors and securing their commitment. Heinz Kurz played a key role in picking out the publisher and convincing him that publishing this volume would be an excellent option.

Nicola Acocella, Claudio Gnesutta, Heinz Kurz and Bertram Schefold have read and commented upon an earlier draft of this introduction. Their advice has revealed crucial to improving it.

Thanks are also due to the many people who have helped me in reconstructing Sergio's scientific development and career history. Snatches of memoirs, records and documents have been combined to produce a coherent composition. Thus our thanks go, in geographical order, hoping not to have left anyone out, to: in Trieste, Gabriella Benedetti, Sergio Bartole, Mario Petrucco, Linda Livia, Mario Cogoy and Attilio Wedlin; in Udine Angelo Marzollo and Flavio Pressacco; again in Trieste, but as 'Trieste Summer School', Jan Kregel and Bertram Schefold; in Florence, Claudio Cecchi, Marco Dardi and Giandomenico Majone; in Manchester, Ian Steedman, Stan Metcalfe and Takao Fujimoto; in Rome, Nicola Acocella, Claudio Gnesutta, Alberto Heimler, Grazia Ietto, Cristina Marcuzzo and Alessandro Roncaglia. Special thanks go to Giuli Liebman Parrinello, whom I eventually had to involve to help me fill in the picture.

Appendix A

Sergio Parrinello

A biography

Sergio Parrinello was born in Trieste (in the North East of Italy) in the late summer of 1935. He studied for his degree in Economics at the University of Trieste, where he graduated in 1962 with Mario Arcelli, as his supervisor with a thesis in applied economics on the use of Leontief matrices in interregional analysis. Given the academic hierarchy, he embarked on his training and career under the guidance of Manlio Resta, then full professor in the chair of Political Economy. In the years he spent in Trieste his studies led him to the issues, then looming large in the major international economics journals, of economic growth and structural change, examined in the analytical aspects and policy implications. Resta's cultural disposition kept him at a distance from the critical movement that was growing at the time; nevertheless, he did not discourage his young pupil from following the new paths (indeed, he indirectly encouraged him) leading him in the direction of the critiques being raised by the Cambridge school against the neoclassical theory of capital and distribution. He was immediately appointed temporary assistant, then (1963-65) *tecnico laureato* (a special type of assistant professor) and by 1965-66 he had already started in his first lectureship in the history of economic thought. In these early years he also collaborated on the courses that Resta was holding at the newly-fledged faculty of Economics of Verona, at the time an annex of the University of Padua.

In 1966, having been shortlisted some time before among the candidates for a post as assistant at the University of Rome, he was called as tenured assistant to the chair of Political Economy occupied by Resta, shortly after moving from Trieste to Roma. In 1968 he obtained the qualification as university lecturer.

He did not abandon the University of Trieste. In the period 1969-72 he had a temporary professorship in Economic Policy at Trieste.

In 1972 he won a competitive examination to become full professor, and in the November of the same year was called to the faculty of Economics at the University of Florence. Here he found a decidedly lively cultural environment, with Pierangelo Garegnani and Giacomo Becattini incarnating the lay spirit while Piero Barucci and Piero Tani represented the Catholic persuasion. At the time Florence was frequented by a great many foreign scholars (Ian Steedman, Nicholas Georgescu Roegen, John Eatwell, Richard Kahn and Joan Robinson, to name but a few). Sergio stayed on in Florence until 1978, when he was called to the University of Rome faculty of Engineering as the first economist to be assigned the chair in Economics applied to engineering. Again, the Engineering faculty offered a stimulating environment and Sergio formed a research group on Institutionalism. After only a few years, however, the sirens were luring him back to the faculty of Economics. In 1981 he returned to the Rome faculty of Economics which he had left as assistant in 1972. In the November of 1986 he moved to the University of Venice, Economics faculty, but by the November of 1989 he was on his way back to the Rome faculty as professor of Mathematical Economics and Political Economy, where he remained until 2006, the year of his retirement.

In 1968-69, on the strength of a scholarship, Parrinello was able to spend some months in London and Cambridge, where he met Sraffa. However, it took another decade for him, by then professor, to begin his travels at the invitation of foreign universities on either side of the Atlantic and weave together that network of acquaintances that proved fundamental for the development of the Summer School of Trieste. In the US he was visiting professor at Rutgers University in 1978. In the early 1980s he went on to hold a number of seminars in various US universities: at Washington University in St. Louis at the University of Colorado at Boulder, at Los Angeles Riverside and at Stanford. In 1982 he became Simon Fellow at the University of Manchester. 1984-1985 saw him at the J. W. Goethe-Universität of Frankfurt am Main, going on to spend some short periods at the University of Graz, and then on to Berlin and in 1989 at the Wissenschaftszentrum. In 1985 he was at the Italian University of Mogadishu, and in the early 1990s he was visiting professor at the University of Okayama in Japan.

Parrinello was certainly not averse to working in the field of applied economics. In the mid-1970s he co-ordinated research on the economy of the Trieste area on behalf of the Province of Trieste, then governed by the centre-left, to draw up a plan for the economic development of the area. The network of contacts with the local government was again to prove useful some time later when the Summer School of Trieste was under way, from 1980 to 1990. Sergio managed to obtain local logistic and financial support to organise and run the Summer School, with Pierangelo Garegnani and Jan Kregel assisting Sergio in coordination at the scientific level. The “Scuola di Trieste” is of its kind a virtually unique international venture. Scholars of Sraffian and post-Keynesian backgrounds from many and varied major centres of cultural research met up for ten days of teaching and discussion with young student researchers from various European and American universities.

Sergio Parrinello proved an indefatigable scientific organiser. Indeed, many years before the Trieste School, still a very young man, he found himself as from 1967 sharing with Mario Resta management of *Metroeconomica*, with increasing responsibilities, to become the one editor in 1983. In the 1980s the journal served to some extent as cultural showcase of the Trieste School. As editor he promoted and organised various workshops and conferences. In the 1990s the labours of so many years were crowned with success when *Metroeconomica* was taken up by a major international publisher, guaranteeing circulation and a prominent role. With the journal about to enter its fiftieth year of life in 1998, he handed over the post of editor to Heinz Kurz.

Appendix B

*Sergio Parrinello's publications (updated July 2009)*³²

- [1] 1965 “L'ottimizzazione della produzione e degli scambi in un sistema pluriregionale: un approccio dinamico”, *Economia internazionale*, No. 4.
- [2] 1966 “L'indice delle variazioni strutturali nell'analisi della produttività globale”, *Giornale degli economisti e annali di economia*, No. 5/6.
- [3] 1966 “Alcune Implicazioni della diffusione del progresso tecnologico in uno schema classico di crescita economica”, *Metroeconomica*, No. 3.
- [4] 1966 “Una nota sulla teoria delle invenzioni indotte”, *Rivista di politica economica*, No. 12.
- [5] 1967 *Alcune considerazioni critiche sul modello disaggregato di L. Pasinetti*, mimeo, delivered at the “Gruppo CNR per lo studio dei problemi economici della distribuzione, del progresso tecnico e dello sviluppo”.
- [6] 1967 “Le scelte degli investimenti nella ricerca: alcuni problemi metodologici”, *Rivista di politica economica*, No. 6, (with G. Majone).
- [7] 1970 “Analisi a livello oggettivo e sviluppo economico non bilanciato”, *Giornale degli economisti e annali di economia*, No. 5/6.
- [8] 1970 "Introduzione ad una teoria neoricardiana del commercio internazionale", *Studi Economici*, No. 2.
- [9] 1971 “Un contributo alla teoria dell'impresa jugoslava”, *Est-Ovest*, No. 3.
- [10] 1973 “Distribuzione, sviluppo e commercio internazionale”, *Economia-Internazionale*, No. 2.
- [11] 1974 “Una nota su alcune recenti teorie dell'impresa jugoslava”, *Est-ovest*, No. 1
- [12] 1975 “Alcune considerazioni sulla cooperazione Cee-Comecon in relazione alla congiuntura economica dell'Europa occidentale”, *Est-ovest*, No. 2

- [13] 1975 “Introduzione”, *John Stuart Mill, Saggi su alcuni problemi insoluti di economia politica*, ISEDI, Milano.
- [14] 1976 “Aspetti controversi del modello keynesiano”, *Politica ed Economia*, No. 6.
- [15] 1977 “Note sulla nozione di equilibrio nell'economia politica”, *Giornale degli Economisti e Annali di Economia*, No. 1-2.
- [16] 1979 “Distribution, Growth and International Trade”, in Steedman I. (ed), *Fundamental Issues in Trade Theory*, Mac Millan, London.
- [17] 1980 “The Price Level Implicit in Keynes' Effective Demand”, *Journal of Post Keynesian Economics*, No. 3(1).
- [18] 1981 *La teoria delle scelte: azioni presenti e gradi di libertà di azioni future*, discussion paper R 81-05, Istituto di Automatica, Facoltà di Ingegneria, Università di Roma.
- [19] 1981 "I prezzi impliciti nel principio keynesiano della domanda effettiva", in Graziani A. (ed), *Essays in honor of A. De Luca*, Liguori, Naples (revised italian version of the article [17]).
- [20] 1982 "Terra", entry in Lunghini G. (ed), *Dizionario di Economia Politica*, Boringhieri, Torino.
- [21] 1982 “Some Notes on Monopoly, Competition and the Choice of Techniques”, *Manchester School of Economic and Social Studies*, No. 3.
- [22] 1982 “Flexibility of Choice and the Theory of Consumption”, *Metroeconomica*, No. 1-3.
- [23] 1983 “Exhaustible Natural Resources and the Classical Method of Long-Period Equilibrium”, in Kregel J. (ed), *Distribution, Effective Demand and International Economic Relations*, MacMillan, Houndmills, Basingstoke.
- [24] 1984 “La composizione della domanda nel lungo periodo: flessibilità nelle scelte e adattamento all’ambiente” in *I problemi economici della tutela ambientale*, Giuffrè, Milano
- [25] 1984 *On the role of Demand Schedules: a Comment*, mimeo, Rome.
- [26] 1984 “Adaptive Preferences and the Theory of Demand”, *Journal-of-Post-Keynesian-Economics*, No. 6(4).
- [27] 1984 “In Memory of Manlio Resta”, *Metroeconomica*, No. 2-3.
- [28] 1985 “Le noyau marshallien de la Théorie Générale”, in Barrère A. (ed), *Keynes Aujord'hui: Théories et Politiques*, Economica, Paris.
- [29] 1987 *Comparative Institutional Analysis and the Cost of Running the Economy*, mimeo, delivered at the “International Workshop on Income Distribution”, University of Tennessee, Gatlingburg, July.

- [30] 1988 "On Foreign Trade and the Ricardian Model of Trade", *Journal of Post Keynesian Economics*. No 10(4).
- [31] 1988 *Costi comparati e norme sociali*, mimeo, "Società Italiana degli Economisti, XXIX Riunione", Rome, 28th October.
- [32] 1988 "Il ruolo di una scuola estiva di economia", *Economia Politica*, No. 3.
- [33] 1989 "Individualismo metodologico contro altri "ismi" in economia: un commento", *Economia Politica*, No. 1.
- [34] 1989 "Individualismo metodologico ed equilibrio: una replica", *Economia Politica*, No. 1.
- [35] 1989 "Norme sociali, fluttuazioni e moneta nel modello $(1 + r) Ap + wl = Bp$ ", *Economia Politica*, No. 2.
- [36] 1989 *The Efficiency Wage Hypothesis and the Representation of the Production Process*, discussion paper FS 190-3, Wissenschafts-zentrum Berlin für Sozialforschung.
- [37] 1989 "The Marshallian Core of the General Theory" in Barrère A. (ed), *Money, credit and prices in Keynesian perspective*, Macmillan, London.
- [38] 1989 "Uncertainty and the Residual Hypothesis", in Kregel J.A. (ed), *Inflation and income distribution in capitalist crisis: Essays in memory of Sidney Weintraub*, New York University Press, New York.
- [39] 1989 "Social Norms, Fluctuations and Money in a Linear Model of Prices", in Sebastiani M. (ed.), *The notion of equilibrium in the Keynesian theory*, St. Martin's Press, New York (English version of [35]).
- [40] 1990 "Some Reflexions on Equilibrium, Expectations and Random Disturbances", *Political Economy, Studies in the surplus approach*, special issue, No. 1-2(6).
- [41] 1991 "On Foreign Trade and the Ricardian Model of Trade", in Blaug M. (ed), *David Ricardo (1772-1823)*, *Elgar Reference Collection series. Pioneers in Economics series*, vol. 14, Elgar Aldershot, (Previously published [30]).
- [42] 1993 "Non Pure Private Goods in the Economics of Production Processes", *Metroeconomica*, No. 3.
- [43] 1995 "The Efficiency Wage Hypothesis in the Long Period" in Harcourt G., Roncaglia A., R. Rowley, (eds), *Income and employment in theory and practice: Essays in memory of Athanasios Asimakopulos*, St. Martin's Press, New York; Macmillan Press, London.
- [44] 1995 "Rendimenti di scala, effetti esterni e scelta delle tecniche", *Economia Politica*, No. 1

- [45] 1995 “Some note of the transfert of Statistical Equilibrium from Phisics to Economics”, Working Paper, n. 6, Dipartimento di Economia Pubblica, Università di Roma “La Sapienza”.
- [46] 1996 "Equilibri Statistici e Nuovi Microfondamenti della Macroeconomia", in Gnesutta C. (ed), *Incertezza, Moneta, Aspettative ed Equilibrio: saggi in onore di Fausto Vicarelli*, Il Mulino, Bologna.
- [47] 1997 “Returns to Scale, Externalities and the Choice of Techniques”, *Manchester School of Economic and Social Studies*, No. 3
- [48] 1998 "Equilibrium", entry in Kurz H. and N. Salvadori (eds), *The Elgar Companion to Classical Economics*, Edward Elgar , Cheltenham.
- [49] 1998 “The Second Fundamental Theorem of Welfare Economics: A Pedagogical Note” *Economia Politica*, No. 2.
- [50] 1998 *Sraffa's quantities and the method of separate stages of analysis*, mimeo, delivered at the Conference "Sraffa and Modern Economics", Rome, October 1998.
- [51] 1999 “Explaining and Understanding Economic Events by Contrasting Alternatives”, *Metroeconomica* No. 3
- [52] 1999 “Supply Constraints on Employment and Output: NAIRU versus Natural Rate: Comment” in Gandolfo G. and F. Marzano (eds), *Economic theory and social justice*, St. Martin's Press, New York; Macmillan Press, London.
- [53] 2000 *Linguaggio e Realtà in Economia*, Esculapio, Bologna
- [54] 2001 “The Price of Exhaustible Resources”, *Metroeconomica*, No. 3
- [55] 2002 “Sraffa's Legacy in Economics: Some Critical Notes”, *Metroeconomica*, No. 3
- [56] 2002 “The 'Institutional Factor' in the Theory of International Trade: New vs. Old Trade Theories”, in Boehm S. et-al. (eds), *Is there progress in economics? Knowledge, truth and the history of economic thought*, Edward Elgar , Cheltenham, U.K. and Northampton, Mass.
- [57] 2003 *The Myth of the Service Economy*, Working Paper, No. 55, Dipartimento di Economia Pubblica, Università di Roma “La Sapienza”, giugno.
- [58] 2003 *Exhaustible Natural Resources, Normal Prices and Intertemporal Equilibrium*, Working Paper, No. 57, Dipartimento di Economia Pubblica, Università di Roma “La Sapienza”, Dicembre.
- [59] 2004 “The Notion of Effectual Supply and the Theory of Normal Prices with Exhaustible Natural Resources”, *Economic Systems Research*, No. 3.
- [60] 2004 *Intertemporal Competitive Equilibrium: a Reappraisal of a Basic Source of Instability*,

Working Paper No. 67, Dipartimento di Economia Pubblica, Università di Roma “La Sapienza”. Aprile.

- [61] 2004 “The Service Economy Revisited”, *Structural Change and Economic Dynamics*, No. 4.
- [62] 2005 “Intertemporal Competitive Equilibrium, Capital and the Stability of Tatonnement Pricing Revisited”, *Metroeconomica*, No. 4.
- [63] 2006 *National competitiveness and absolute advantage in a global economy*, Working Paper No. 95, Dipartimento di Economia Pubblica, Università di Roma “La Sapienza”, Novembre.
- [64] 2007 “Introduction: a Note on Goods and Services and Input–Output Analysis”, *Metroeconomica*, No. 3.
- [65] 2008 “The Stability of general Intertemporal Equilibrium: a Note on Schefold”, *Metroeconomica*, No. 2.
- [66] 2008 “A Reply to the Comment by Duncan Foley”, *Metroeconomica*, No. 2.
- [67] 2008 “A Reply to Schefold”, in *Sraffa or An Alternative Economics*, G Chiodi and L. Ditta (eds), Palgrave MacMillan, Basingstoke.
- [68] 2009 “The notion of national competitiveness in a global economy”, in Vint J, Metcalfe J. S., Kurz H. D., Salvadori N., and P. Samuelson (eds), *Economic Theory and Economic Thought, Essays in Honour of Ian Steedman*, Routledge, London.

Notes

¹ A biography of Sergio Parrinello is provided in the appendices of this introduction together the list of his publications. Text citations to his works refer to a number in square brackets, follow the format used in the appendices.

² Porta (2000, 2004). An inside reconstruction of the Italian debate on the new paradigm in the 1960s and 1970s is offered by one of its protagonists, Pierangelo Garegnani (Garegnani 1984). Interesting evidence was also provided by Paolo Sylos Labini (Sylos Labini 1984).

³ The destination preferred by young scholars following in the wake of Garegnani and Pasinetti in the 1960s (Casarosa 2004 and Ciocca 2004).

⁴ Some hints for interpretation can be found in Marcuzzo and Rosselli (2002), and the clear, well-structured position in Mainwaring (2009).

⁵ The first included Pierangelo Garegnani, Luigi Pasinetti and, to some extent, the young Luigi Spaventa.

⁶ Those who lacked the right sort of support in Italy to obtain scholarships to study abroad had no choice but to follow the traditional postgraduate academic path, pursuing some lines of research with the – at times distant – guidance of the professor with whom graduation was normally completed, without following any formalised a line of study. In the following passage, drawn from a note drafted for the conference “In ricordo di Manlio Resta nel centenario della nascita” (In memory of Manlio Resta on the hundredth anniversary of his birth) (Rome, ABI, November 2008), Sergio Parrinello offers an autobiographical example of this practice and at the same time reference to his early topics of research and the origins of his interest in

Sraffian theory. He writes:

At the beginning of the 1960s Manlio Resta had sensed the importance of a slender volume little known in Italy entitled “Production of Commodities by Means of Commodities”. I remember how we gathered round to read it and the discussions on each page of that enigmatic text by Sraffa, which Resta tackled together with a quartet of us young assistants on the winter evenings in Trieste. We would spend long evenings in his room in the Institute of Trieste deep in discussion (...). Outside the cold northeast wind was blowing and we could hear it whistling through the triple glaze of the windows on the top floor of the Faculty. Here was prompted my interest in certain not exactly orthodox contributions on economics, which I tracked down with great curiosity among the shelves of the Institute library: Marx, Keynes and Schumpeter, but also Simon, Boulding, Baumol and Hirschman were among the authors I read most keenly, stimulated by those evening meetings with Resta, while the hurdle represented by Sraffa’s slim volume was always there as an intellectual challenge.

And again, we read in this passage [27]:

With regard to Resta's tendency to give preference to the theory of production and efficient distribution of resources, I well remember the intense discussions that he loved to encourage among his students, at the beginning of the Sixties in Trieste on models of linear programming applied to the allocation of resources, on models of optimum growth and on the analysis of technical progress. ... I shall not forget the genuine interest for the science that induced Resta, during his time in Trieste, Verona and Rome, to go deeply in his writings and in his discussions with students, into the theories of von Neumann and Sraffa and to face up to considerable mathematical difficulties.

⁷ He made only fleeting visits to Cambridge.

⁸ It is in fact difficult to situate his work within one of the three Sraffian schools of thought (Roncaglia 1991).

⁹ The Pasinetti model was also criticised on the grounds that in general different “horizontal” matrices can generate the same set of vertically integrated sectors.

¹⁰ Listed below by broad content typologies are Sergio Parrinello’s contributions as from 1970.

1. “Constructive” theories of the paradigm

- Foreign trade [8], [10], [16], [30], [41], [56], [63], [68]
- Exhaustible natural resources [20], [23], [54], [58], [59]
- Institutional analysis [29], [31], [35], [39], [42], [36], [43], [57], [61], [64]

2. Themes within the neo-Ricardian paradigm

- Demand composition and uncertainty [18], [22], [24], [25], [26], [38], [51]
- Market forms [21]
- Returns to scale [44], [47]

3. Methodology and economic theory

- Equilibrium [15], [33], [34], [40], [45], [46], [48], [50], [60], [65], [66], [67]
- Keynesian themes [14], [17], [19], [28], [37], [52]
- History of economic analysis [13], [55]

4. Miscellany

- [26], [32], [49], [53]

5. Socialist economies

- [9], [11], [12]

His contributions before 1970 could be grouped in the rough category of “Growth” themes.

¹¹ [8] and [10], for example.

¹² As from 1980 about 20 per cent of his contributions are in Italian.

¹³ In a footnote at the end of the article, he pointed out that he had received from Ian Steedman and Stan Metcalfe two manuscripts addressing similar problems with a neo-Ricardian approach, albeit starting from different hypotheses, when he had already finished the article. The manuscripts bore the titles “A Ricardian

Model of Trade and Income Distribution” and “On Trade between Countries with the same Ricardian Technology”. In the course of 1970-71, the second manuscript was presented by Ian Steedman in a scientific assembly of the “Gruppo C.N.R. per lo studio dei problemi economici della distribuzione, del progresso tecnico e dello sviluppo” and discussed by the participants. As from 1972 Metcalfe and Steedman published various articles on international trade taking a neo-Ricardian approach, collected in Steedman (1977, 1979).

¹⁴ Garegnani (1970), Metcalfe and Steedman (1972).

¹⁵ P. Krugman, G. Grossman and E. Helpman are the leading representatives of the NTT.

¹⁶ See the references contained in [20] e [23].

¹⁷ Schefold (1989, chapter 19.b) finds in Parrinello [20] the first attempt to deal with exhaustible natural resources within a neo-Ricardian framework, thereby deriving the Hotelling rule. The appraisal is repeated in Schefold (2001, p. 319, footnote 2): “The pioneer of the approach was Parrinello (1982).”

¹⁸ We owe to Garegnani (1976, 1983) conceptual depiction of the equilibrium as “long-period positions” in the models of classical derivation.

¹⁹ Strictly speaking this position is attributable to one of the three schools of Sraffian derivation (Roncaglia 1991), namely that of Garegnani.

²⁰ A notion subsequently developed in [45] and [46].

²¹ A topic already addressed in [39].

²² In an unpublished text [50] Parrinello offers an incisive outline of the theoretical function of the “core” of classical theory:

In a general sense, an economic magnitude is defined “normal” within the classical approach because it is supposed to be theoretical outcome of the power, force, capacity of the free competition and wealth seeking behaviour, once these explanatory factors have been isolated by others. Therefore a normal magnitudes is not defined as an average over its actual values. ... The field of useful application of the wealth seeker and free competition assumptions ... it is not confined to the unknowns of equation $(1+r)\mathbf{Ap}+w\mathbf{l}=\mathbf{Bp}$ the same basic assumptions can be also used to theorize part of the quantity side. In this sense, beside normal prices and normal rate of profits, we can conceive a normal output, a normal real wage, a normal technique (i.e. cost minimizing technique), a normal employment and a normal degree of capacity utilization etc.

²³ He returned to the theme of equilibrium in the Sraffian model in subsequent texts ([60], [62], [65], [66], [67]), but within a context of intertemporal equilibrium in which a heterodox *tatonnement* process is at work.

²⁴ I owe much of the information on the School of Trieste to the reminiscences of Jan Kregel, who was good enough to send me a written record. With a series of telephone conversations Angelo Marzollo also offered me some further useful references. For the contents of the school I drew upon contributions by Arena (1987) and Parrinello himself [32].

²⁵ The Trieste Summer School was the fruit of an idea shared by P. Garegnani, J. Kregel and S. Parrinello. The first step, in the 1980 in Udine, was to organise a conference under the auspices of Angelo Marzollo and the Centre for Mechanical Science (CISM). Over thirty economists from fifteen countries having direct or indirect interest in the Cambridge School met and decided to create, for the summer of the following year, an international summer school. The Centre for Advanced Economic Studies was constituted, to become subsequently the Centre for the Study of Political Economy, with premises in Trieste, and a board formed by Angelo Marzollo, Giampaolo de Ferra, Pierangelo Garegnani, Jan Kregel and Sergio Parrinello, the three last named, the economists, constituting the Scientific Committee which organised the first edition of the Trieste Summer School in the late summer of 1981. The school went on from year to year until 1990. Each edition of the school was regularly followed by an international conference open to all. The scientific committee dealt with the didactic planning: it decided on the programmes, professors, students and foreign and Italian

graduates entering upon university careers, in such a way as to preserve a certain equilibrium between the various strands of the Cambridge tradition. The lectures and workshops were held in the morning and early afternoon in the right conditions to favour full and general discussion. Sergio Parrinello was the key figure and kept in touch with the local authorities for logistic and financial support, securing further funds from the economic committee of the CNR (National Research Council) and supervising all the organisational aspects of the school.

²⁶ In the last years of the school's activity, attesting to the widening range of theoretical orientations, there came to work side-by-side with the five original members of the Centre for the Study of Political Economy G. Becattini, G. Borruso, A. Graziani, L. Pasinetti, A. Roncaglia and P. Sylos Labini.

²⁷ Kurz and Gehrke (1999) outline the history of the journal.

²⁸ A critical re-evocation of this important scholar is to be seen in Pomini (2009) and in Shackle (1965).

²⁹ The publisher of the journal was the Casa Editrice Cappelli with registered office in Bologna and operational base in Trieste where it ran the eponymous Cappelli bookshop. *Metroeconomica* came to light as a publication of the Trieste bookshop, which was already acting as publisher of texts edited by professors of the local university. In 1962, on the death of founder, who had in fact moved on to the University of Genoa in the mid-1950s, the publisher Cappelli, owner of the journal, invited Manlio Resta, who had succeeded Fossati to the chair at Political Economy in Trieste, to take over editorship of the journal.

³⁰ Cappelli was a small publisher working on the Italian market alone, without the scope for circulation that can only be achieved by an international publisher specialising in scientific material.

³¹ In the last few years he has enjoyed the support of Neri Salvadori as second managing editor.

³² This bibliography has been collected consulting the databases "Econlit", "Essper" and other minor sources.

References

- Arena, R. (1987), “L’*école internationale d’été de Trieste (1981-1985): vers une synthèse classico-Keynesienne?*”, *Oeconomica*, No. 7.
- Bidard C., and Erreygers, G. (2002), *A Critique of Post-Sraffian Approaches to Exhaustible Resources*, Montréal, mimeo.
- Casarosa, C. (2004), “Gli studi nel Regno Unito della seconda generazione” in Garofalo, G. and Graziani, A. (eds), *La formazione degli economisti in Italia, 1950-1975*, Bologna, il Mulino.
- Ciocca, P.L. (2004), “Il contributo di via Nazionale”, in Garofalo, G. and Graziani A. (eds), *La formazione degli economisti in Italia, 1950-1975*, Bologna, il Mulino.
- Garegnani, P. (1970), “Heterogeneous Capital, the Production Function and the Theory of Distribution”, *Review of Economic Studies*, No. 3.
- Garegnani, P. (1976), “On a Change in the Notion of Equilibrium in Recent Work on Value: a Comment on Samuelson”, in Brown, M., Sato, K. and Zarembka, P. (eds), *Essays in Modern Capital Theory*, Amsterdam, North Holland.
- Garegnani P. (1983), “The Classical Theory of Wages and the Role of Demand Schedules in the Determination of Relative Prices”, *American Economic Review (Paper and Proceedings)* No. 2.
- Garegnani, P. (1984), “Su alcune questioni controverse circa la critica della teoria della distribuzione dominante e lo sviluppo di una teoria alternativa”, *Quaderni di storia dell’Economia Politica*, No. 2.
- Kurz H. D. (ed) (2000), *Critical Essays on Piero Sraffa Legacy in Economics*, Cambridge University Press.
- Kurz H. and Gehrke, C. (1999), “Metroeconomica at 50”, *Metroeconomica*, No. 3.
- Mainwaring, L. (2009), “Can Sraffa Point Us to a Better Future?”, this volume.
- Marcuzzo, M. C. and A. Rosselli (2002), “Economics As History of Economics: The Italian Case in Retrospect”, *History of Political Economy*, Vol. 34 (0), pp. 98-109, Supplement.
- Metcalf J.S., I. Steedman (1972), “Heterogeneous Capital and the HOS Theory of Trade”, in Parking J.M. and Nobay, A.R (eds), *Essays in Modern Economics*, London, Longman.
- Metcalf J.S., I. Steedman (1973), “On Foreign Trade”, *Economia Internazionale*, No. 3-4.
- Pomini, M. (2009), “A Note on Metroeconomica: Shackle’s Contribution”, *Metroeconomica*, No. 2.
- Porta, P.L. (2000), “Europe and the Post-1945 Internationalization of Political Economy: the Case of Italy”, in Coats, A.W. (ed), *The Development of Economics in Western Europe since 1945*, London, Routledge.

- Porta, P. L. (2004), “Tradizione e innovazione negli studi economici nell’Italia del Novecento”, in Garofalo, G. and Graziani A. (eds), *La formazione degli economisti in Italia, 1950-1975*, Bologna, il Mulino.
- Roncaglia, A. (1991), “The Sraffian schools”, *Review of Political Economy*, Vol. 3, No 2; english translation of “Le scuole sraffiane”, in Becattini, G. (ed), *Il pensiero economico: temi, problemi e scuole*, Torino, Biblioteca dell'economista, ottava serie, UTET, pp. 233-74.
- Schefold, B. (1989), *Mr. Sraffa on Joint Production and Other Essays*, London, Unwin Hyman.
- Schefold, B. (2001), “Critique of the Corn-Guano Model”, *Metroeconomica*, No. 3.
- Shackle, G.L.S. (1965), “Eraldo Fossati, 1902-1962”, *Econometrica*, No. 3.
- Sraffa, P. (1960), *Production of Commodities by Means of Commodities. Prelude to a Critique of Economic Theory*, Cambridge University Press, Cambridge.
- Steedman, I. (ed) (1977), *Saggi sulla teoria del commercio internazionale*, Marsilio Editori, Venezia.
- Steedman, I. (ed) (1979), *Fundamental Issues in Trade Theory*, London, MacMillan.
- Sylos Labini, P. (1984), “L’attività svolta nel periodo 1964-1982 dal gruppo di Economia costituito presso il C.N.R.”, *Quaderni di storia dell’Economia Politica*, No 2.
- Sylos Labini, P. (ed) (1973), *Prezzi relativi e distribuzione del reddito*, Turin, Boringhieri.
- Velupillai, K. Vela (1989), “The Existence of the Standard System: Sraffa’s Constructive Proof”, *Political Economy-Studies in the Surplus Approach*, No 1.
- Velupillai K. Vela (2008), “Sraffa’s Mathematical Economics: A Constructive Interpretation”, *Journal of Economic Methodology*, No. 4.