

Pasinetti's Separation Theorem

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1. Protoeconomics

Pasinetti's book is his monument for the Cambridge economists, followers of Keynes and Sraffa, among whom he once represented the younger generation. The book bears the subtitle "A revolution in economics to be accomplished". By this he means that the approaches of the Cambridge economists form a body of thought that should be developed into a coherent theory, in order to complete the Keynesian revolution, which has been accepted by the economic profession only in a mutilated form. The book expounds this diagnosis; it seems to be more true than ever. On the one hand, important aspects of the Keynesian theory have become mainstream economics and dominate economic policies. Everybody believes that stimulating demand will increase employment or at least help to avoid a slump. Interest rates are at a historical low (written in September 2020). One may recall Keynes's euthanasia of the rentier (Keynes 1973, p. 376), for the yields of bonds are negative. On the other hand, the mainstream is far from having adopted Cambridge theory. Neoclassical theoretical tools are what is being taught in most universities, and the rentier is quite alive, investing in shares and funds, but not in bonds as in the old days. Asset prices are high, there are deflationary tendencies in some countries that experience growth, and these ambiguities are also reflected in attitudes towards deficit spending, which is desired in the short run and feared in the long. Criticisms of economic theories abound, but on which can we rely? It is easier to tear down than to build.

The main ideas in Pasinetti's book are presented as results of a life-long endeavour towards a foundation of an economic theory that isolates the stable elements and provides a frame work for thinking about economic questions by complementing the basic scheme with a broad analysis of institutions in constant change and evolution. He speaks of a "separation theorem" (Pasinetti 2007, p. 274) to distinguish these stages of investigation. He is aware that similar distinctions have been made by others. He mentions Sraffa's scheme of Production of Commodities by Means of Commodities. Sraffa's equations show how long run prices result as equal to cost of production, with a uniform wage rate and uniform rate of profits, if the structure of commodity production is given, but the determination of demand and distribution is determined by other forces. I have described Sraffa's model as open in that it leaves room for changing historical influences on the composition of output, on the evolution of real wages and profitability and, in particular, on the effects of different forms of technical progress. Garegnani speaks of a "core" of economic theory, described by the Sraffa equations, and of a periphery, where historical, social and political forces are at play. Pasinetti himself recalls Joan Robinson's distinction between logical and historical time, and from here we could go back to older methodological distinctions of a similar nature between pure theory and the consideration of institutions, or between "rational" and "visual" or "intuitive" theory, as Edgar Salin and Arthur Spiethoff would call it, or between abstract laws and individual events or even between Kantian philosophy and phenomenology

(Schefold 2011). Finally, there is also an ethical dimension to the idea of a separation theorem, to which we shall come at the end of this paper.

Pasinetti is cautious in approaching the broader horizon. His main effort is to go beyond Sraffa by capturing structural change, which consists, with given techniques, in the adaptation of the levels of output in different industries to demand that increases for each commodity according to Engel laws, while at the same time there are returns to scale, reducing or increasing unit costs, and there is not only a gradual technological change, but also the possibility of technological revolutions, which upset the structure of production, when individual industries undergo a more profound transformation. Growth is based on cumulative causation. As in Adam Smith, increasing division of labour allows to produce more cheaply, but also to conquer larger markets, and the great question is: what coordinates these manifold activities?

Pasinetti does not turn to the supply and demand mechanism in order to explain this coordination. He associates that with neoclassical theory, and neoclassical theory is flawed; he here takes the result of the Cambridge controversies on capital as something given. He does not seek an alternative causal theory. His reference to institutions can only mean that he does not believe in the existence of one alternative theory, because the institutions, on which the day-to-day development of the economy depends, are various and changing. He does not say, perhaps he even does not realise that, in so doing, he accepts the scepticism of the Historical School with regard to a theory which would at the same time claim a general explanatory power and be capable of prediction. He surprisingly turns to a normative idea, singles out full employment as an important goal and postulates that the political economist should attempt to realise it both by using existing institutions and by transforming them. Although only a few economists have taken such a turn, there are predecessors and parallels. I here only want to recall that Adolph Lowe completed his theory of growth with an analysis of the policy instruments that might allow to stabilize growth to avoid the cycle and to attain permanent full employment.

Pasinetti speaks of the “production paradigm”, and he confronts it with the neoclassical “exchange paradigm”. Where is the difference? One, to be sure, concerns the subjective theory of value, but Pasinetti uses Engel curves, and these may nicely be derived from stable preferences, without using the word “utility”, by letting incomes increase and seeing how households allocate and reallocate their means between different consumption goods. Modern neoclassical theory uses activity analysis to describe technology, and the formalism used is not so different from that employed by either Sraffa or Pasinetti. So the real difference concerns distribution. Classical theory does not assume that factors are supplied by balancing consumption and effort or sacrifice. What is the heart of the matter?

I think it can be elucidated by going back to the controversies Böhm-Bawerk had with the Ricardian economists of his time in Germany. The corresponding essays have never been translated into English, as they seem to be only of local interest, because it was a peculiarity of German academic economics that Ricardianism had survived the incipient neoclassical revolution in some universities, where professors had been impressed by Marx but did not want to accept his system either for the incipient neoclassicism. So Böhm-Bawerk would try to convince these Ricardians by conceding that the theory of natural prices in Ricardo was alright (see Schefold 2019). He understood it quite well, including the complications deriving from the different times it takes to bring a commodity to market (the time structure of production) and the invariable standard of value (which would later become the standard commodity in Sraffa's hand and for which Pasinetti (1981) would propose an intertemporal extension). Böhm-Bawerk concentrated on one single criticism of Ricardo.

Surprisingly, Böhm-Bawerk would accept that Ricardo treated profits as a residual, depending on the level of the necessary wage, if there was only one technique, that is, if the method of production in each industry was given without an alternative so that there was a given level of the physical surplus, to be appropriated by the capitalists and possibly landowners. But capitalists would not be content with profits as a haphazard residual; capital would be forthcoming only if capitalists could expect an adequate return, and the return in the form of the given residual, derived from the given technique and the given necessary wage, could be too much or too little. Hence, to make it possible for capitalists to get the adequate return which would guarantee an equilibrium (and equilibrium really meant full employment), techniques would have to be variable. This is explained in *Kapital und Kapitalzins*, vol I, using a Ricardian corn model (Böhm-Bawerk (1921[1884] p. 82). Böhm-Bawerk had to work out a theory of the supply of capital, based in his case on time preference, and of the demand for it, based on the choice of techniques, in his case analysed by means of the average period of production. Production functions and saving functions are only variants of this idea, and so is the marginal efficiency of capital in Keynes in the absence of uncertainty.

Keynes, having introduced the marginal efficiency of capital as that amount of investment to be undertaken which would make the investment equal to the discounted expected returns from the investment withdrew the idea immediately, as it were, by evoking the animal spirits, which could in principle lead to any level of investment. To the extent that he maintained the investment function, it was dependent on the rate of interest, the rate of interest was a monetary phenomenon. Now speculative forces could prevent the economy from reaching the equilibrium (with full employment) that Böhm-Bawerk had postulated on the basis of his specific vision of the process of investment or of the demand for capital goods.

So the core of the production paradigm, as opposed to the exchange paradigm, seems to be that the economist is agnostic as to the level of investment and of desired capital equipment, unless expectations of future returns can firmly be taken as given - and even if they are given – they can be wrong so that equilibrium is not reached. Capital investment then is a historical process in historical time, as Joan Robinson would put it. In fact, there is no investment function in classical economics; Marx explicitly denied a significant influence of the rate of interest on investment. It is true and everybody knows and agrees that existing investment plans must be curtailed, if the interest rate rises suddenly because of a speculative event or because the central bank intervenes, for the existing funds are then not adequate to carry out the plans that have been made, but that does not mean that new investment plans are formed, if the interest rate is – also surprisingly – lowered.

The capital controversy has been concerned with the influence of the rate of profit or of the rate of interest on capital since the times of Böhm-Bawerk and Irving Fisher. Keynes had criticised the neoclassical theory of the demand for capital, which we have sketched following Böhm-Bawerk, by analyzing it in the short run, looking at the process of investment based on expectations that were uncertain, possibly wrong, and the investment demand was dependent on a rate of interest that was influenced by monetary (speculative) forces unrelated with the full-employment equilibrium position. The capital critique that we associate with Sraffa states that a demand function for capital goods, leading to a stable equilibrium, may not exist, even if one abstracts from uncertainty, because the profit-maximizing amount of capital, valued in long-run prices, may increase with the rate of interest, so that a high rate of interest and a low wage rate, may paradoxically be associated with a high capital intensity. It means that low wages in a situation of unemployment will not necessarily be associated with the introduction of labour-saving techniques that might absorb the unemployed.

The later Pasinetti does not speak much about the capital theory debate, in which he had been a pioneer when younger (Pasinetti 1975, pp. 200-213). The Cambridge theory of distribution also remains in the background (but we shall return to it later). My name for his scheme of structural evolution as a dynamic extension of Sraffa's theory is proto- economics, because the analysis of real change is subsequent to it, and proto-economic seems to me also to be a good designation for Sraffa's pure theory as an "open" model. Pasinetti analyses the conditions under which full employment can be maintained. For instance, if a country strives to raise employment in an international context, it must, in order to sell more, raise productivity, but this reduces the labour required per unit of output. Pasinetti emphasises learning as the essential condition for realizing growth with cumulative effects. He also mentions intertemporal and, indeed, intergenerational transfers, as in Böhm-Bawerk, without, however, postulating a general trend for time preference in the sense of Fisher's impatience.

As an aside, I should like to observe that there is more institutional content to Sraffa's and Pasinetti's proto-economics than is apparent, and these proto-economics are not quite invariant to different theories of distribution. For instance, the standards which define the homogeneity of commodities have different historical origins. They may be based on convention of guilds of artisans and merchants, they reflect national characteristics or they are supervised by institutions created by governments (Scheffold (...)). More complex is the question of what defines the standards of needs and efforts in the case of labour. Here distributional problems enter. However, it is now my task, by assignment of the editors, to attempt a conclusion on the bases of the contributions written by the other authors of this Volume. The editors have explained in their preface that Pasinetti provides nine essential characteristics of Cambridge and, indeed, his own theory, and the contributors to this Volume have taken up the characteristics one by one. How do they fit together?

2. Effective demand and methodology

We thus come to Pasinetti's characteristics of Cambridge economics, expounded in his book on pp. 219 – 236, which are discussed, one by one, by the authors of this volume. The first theme is possibly the most difficult. It is treated by *Cristina Marcuzzo*. Pasinetti argues that "reality (and not simply abstract rationality)" should be the "starting point of economic theory" (Pasinetti 2007, p. 219). Realism comes first. But is this not the basic principle of any economist? Many years ago, I was introduced to a colleague. His subject was theology. I responded by confessing to be an economist. "Ah", he replied, "the opposite!" Economists are the "worldly philosophers" in Heilbroner's (1980) words. I was reminded of Polanyi's distinction between economics as the science of the material reproduction of man on earth, and the alternative definition as the science of the rational use of scarce means of production to the alternative ends of utility maximisation of the part of the consumer and profit maximisation on the part of the entrepreneur. The neoclassical economist would concede that the former definition is realist, but does not lead to theory, while, he would claim, the latter concern also is realist, insofar as it starts from fundamental characteristics of economic action. Both ways to understand the worldly pursuits of man are different from other sciences, which try to capture other realities of nature, of human creation or indeed of metaphysical entities, that the religious person believes to have been revealed. Curious role changes can thus be observed, if one pursues the methodological question of what realism means in economics. This happens in economic history. Often mainstream economists of these days are attracted by cliometrics, that is by the attempt to explain past economic development on the basis of quantitative measurement of economic data, in order to prove, for instance, that the work of slaves on plantations could be as efficient as that of wage labourers. Weberians insist that economic history can not be understood without tracing the slow change of economic rationalities. Relatively abstract diametric work shall lead to realism, a sociological approach explains history in terms of changing modes of thought.

An example: Realism as opposed to abstract rationality does not simply mean that one should start from the description of the lives and actions of the specific historic individuals. Not even the Historical School would have been content with that. Sombart pointed out that Marx had explained the origin of the proletariat but had failed to explain both the origin and the characteristics of entrepreneurship. Hence, Sombart developed a historical typology of entrepreneurs, distinguishing for instance between attitudes typical for mercantilism and those that emerged with the industrial revolution. Weber thought that entrepreneurship and capitalist forms of acquisition were as old as antiquity, but that modern entrepreneurship came about only about through a contingent religious movement, represented by certain Calvinist sects. Weber's use of ideal types to characterize historical transformations of the economy was not realist in the direct sense, in that the ideal types were not realistic images of historical formations, but constructs, which could be counterfactual, for it was necessary to show why old formations such as the Roman economy was modern in one sense and not in another. There was mercantile entrepreneurship, but it was linked to political interests, there was a free labour, but slavery predominated at the time, when Rome was strongest, etc.

Socio-economics was built on a synthesis, in which the formation of economic types replaces "abstract" rationality. It seems to me that Cristina Marcuzzo arrives at a similar conclusion, though she restricts her argument to the domain of Cambridge economics. She begins by distinguishing the latter from the positivist approach, represented by Milton Friedman, who thought that models were useful for capturing reality, if they were successful in prediction, without being realistic in their assumptions. She uses Keynesian analyses of speculative behaviour, in particular formulations by Richard Kahn, to illustrate that investment decisions are not optimizing choices on the bases of the identification of a certain behavioural function, but constrained choices of individuals subject to uncertainty and forced to make guesses. Keynes, when discussing the stock exchange, used the metaphors of "bulls" and "bears", hence a very specific typology. Marcuzzo also presents Kaldor's formation of stylized facts as an expression of a similar symbolism. It also leads to typologies, I should say, and Marcuzzo investigates the history of this way of thinking about the economy, starting from Marshall. She also admits objections. Animal spirits do not suffice to explain investment; they are one of those important negative characteristics which we need in order to avoid an imaginary faulty realism in the form of an ahistorical investment function based on a stable relationship between the rate of interest and entrepreneurial activity.

Typologies can be a starting point for an economic theorising that is not mere abstraction but built on concepts with a real counterpart, or on them models can be built. We find typologies in Pasinetti, for instance in his distinction between different savers: there is the inherited distinction between saving out of profits and saving out of wages, to which he added the saving out of the profits of workers, who own capital

(Pasinetti 1974). This was a new animal in the zoo of the agents in the capitalistic markets. The neoclassicals hoped that the workers, with their savings coming from two sources, would outperform the capitalists and end up owning the total capital in the economy in the long run, but Pasinetti's prediction was more realistic, in that he showed that a stable distribution of wealth was possible in a steady state; at present it seems that the distribution of wealth is growing more unequal. Whatever the outcome, we may observe that it was the underlying typology which provided intuition, realism and relevance for what otherwise might have remained a discussion of a very abstract model.

Salvadori and Signorino are concerned with Pasinetti's second proposition. Cambridge economists pursue an economic logic, which shall be internally consistent and this is more than the formal rigour of a model. Again a tricky proposition! Models can be formally rigorous without being concerned with economics at all. What then does internal consistency add to formally consistent models that are concerned with economic issues? To explain it, Salvadori and Signorino start from the IS-LM model, which was meant by Hicks to capture the essence of the Keynesian revolution, but which was not accepted by Keynes as an adequate representation of his ideas. Why did the Hicksian approach come to dominate the textbooks all the same and why were Keynes and the Cambridge Keynesians not able to present a victorious alternative? There are contingent historical reasons: Keynes's early death, his followers were not cooperative, etc., but enough time has elapsed since, I should say, to develop a valid substitute. If one says that the revolution is unaccomplished, one suggests that a real revolution is possible, but then one ought to be able to say what it is, almost a century after the revolution itself!

Salvadori and Signorino emphasize the importance of the choice of the assumptions, not the results we derive from those assumptions (p. XXX). "The explanatory value of a given theory depends on its ability to provide a logically consistent description of the *true* (their emphasis) causal mechanisms working in the "world out there" (p.XXX).

They illustrate the significance of this methodological position by reproducing Sraffa's argumentation, starting with his critique of Marshallian economics in 1925 and culminating in the Symposium of 1930, when Sraffa said: "I am trying to find the assumptions implicit in Marshall's theory." (p.XXX). Data can usually be explained by several theories. They probably here think of a rather restricted data set. But if this the case, it is important to check whether the causal mechanisms postulated in the theory operate also in the reality. How is this to be tested? Is this causal mechanism correctly identified, if it allows correct predictions? Do we go back to Popper? Or is it not rather a matter of "understanding" ("*verstehen*")? Sraffa, in his discussion of Marshallian economics in 1925, distinguished a number of representative cases (increasing returns,

diminishing returns, partial equilibrium, general equilibrium, etc.), and he would analyse the internal logic. This is Salvadori's and Signorino's way of opposing to a Friedmanite a Sraffian methodology. They continue, speaking of the very traditional method of successive approximations. I also believe that this principle remains important but I should add again that Sraffa's method involved a historical specific *Verstehen*. One example: Sraffa criticised Turgot in 1925 for thinking that output per head and the marginal product are low at first, if a given large piece of land is to be cultivated by a few workers, that both rise, as more labourers are added, until an optimum is reached, when marginal product and average product are equal; diminishing returns to additional quantities of labour set in thereafter, and output per head rises more slowly. Sraffa points out that, if land is divisible, the optimal technique can be used from the start, so up to the point of the equality of marginal product and average product, and both are falling thereafter. In the light of the present discussion and in the spirit of Pasinetti, we might say that Turgot had an abstract rationality in mind which led him to overlook the possibility that only part of the land could be cultivated, if land was divisible, so as to get a maximum return. We can call Turgot's rationality abstract, but we can also see that it is simply faulty, and it is moreover ahistorical. For ordinary texts on agriculture in the 18th century would advise farmers not to cultivate their entire land, if they did not have enough workers to do it well, and the Book of Changes in China said thousands of years ago that weeds would grow abundantly if one tries to cultivate too much land. Realism involves a holistic understanding that incorporates social conditions.

If political economy in the 19th century had taken its start from Malthus and not from Ricardo, the world would be "a much wiser and richer place" today, Keynes once famously exclaimed (Keynes 1972[1933], p. 101). Keynes did not say that we should have better theory, but a better understanding, and he made the very strong statement that this imagined change in the world of ideas would have changed the actual world. Pasinetti does not take up this amazing challenge to any materialist theory of history. He cautiously reduces Keynes's claim to the suggestion that, starting from Malthus, there could have been an enrichment of classical economics by somehow incorporating the principle of effective demand. He thus projects our modern problem of reconciling classical and Keynesian theory on the beginning of the debate about true classical analysis in the exchanges of Ricardo with his friends and correspondents like Say and Sismondi, of whom Malthus was the most important. *Heinz Kurz*, in his contribution, stays in the same ditch and digs deeper. He musters the analytical apparatus of Malthusian economics and shows convincingly that they are deficient. The view that there can be a general glut cannot be transformed into a theory of an economy in a state of underemployment. He shows that Malthus sticks to the classical view of accumulation undertaken by capitalists who both save and invest so that the two appear as identical. As Pasinetti (1974, p.30) states, Ricardo referred to Say: Every producer wants to consume the product or to sell it. In the latter case, the producer obtains a quantity of money equivalent to the value of the product, which will be spent, so that

new purchases equivalent to the value of the product will take place. But why should someone who has sold be compelled to buy, Marx would later ask? If one can find a systematic reason why sellers do not necessarily become buyers, one has found an explanation for a slump, and if one has reason to believe that the cause will persist, so will the effect of underemployment. Heinz Kurz says very rightly that Malthus fails to find an explanation of why money can become a bottomless sink, and he later describes how Keynes explained the phenomenon. The consumption function has to come in; it provides a stable grounding for expenditure of current income, but also for a flow of savings. This must match investment, investment, in given circumstances, depends on the rate of interest, but this is subject to speculative movements. Say's argument seems ludicrously superficial in a Keynesian perspective, but Say gave a reason why the money would be spent, and it has briefly been noted by Pasinetti (1974, p. 30): Say observes that the value of money is perishable, so the income-receiver spends his money "lest its value should vanish in his hands". Say therefore speaks of a situation in which there is, contrary to the situation which Malthus has in mind, a systematic reason to spend, namely inflation. He lived and published during the Napoleonic Wars, when inflation was a recurring phenomenon, and hence his theory was historical in that it referred to an economic constellation in which Keynesians also expect full employment normally to obtain.

Heinz Kurz shows very nicely how Malthus tries to construct a scenario in which landlords save. For Malthus, this was kind of a counterfactual by which he wanted to demonstrate that their in reality high propensity to consume helped to keep employment up. For if they did not consume, they would employ fewer productive labourers, these labourers would be employed in industry and become productive, but who would buy their products? Ricardo answered that then these products would not be produced in the first place, and the scenario really did not show more than that, if consumption is reduced, employment will fall, but it is not shown, why this should happen systematically and affect the economy as a whole.

Heinz Kurz and Pasinetti therefore are of one opinion: Malthus lacked the analytical apparatus to prove his case. Pasinetti praises Malthus for having tried, Kurz scolds him for not having succeeded.

How then could Keynes be so enthusiastic about Malthus? Perhaps because, when he wrote that phrase in 1933 or earlier, he did not have that analytical apparatus himself, but hoped to find it. And Keynes felt that the Malthusian attempt was of historical significance because it took the historical context seriously. Of course it is true that, if the rich landlords in England, much richer at the time than even the rich bourgeois according to Hobsbawm (1969, p. 31, p.80), had saved more, without investing the savings themselves, employment would have a fallen, for industrial production was, even with faster growth, unable to absorb most of the labour force for a

long time, and I doubt that a possibly lower rate of interest could have induced the entrepreneur to accumulate much faster (see above). In this, Malthus was a realist, and if one wants to speculate like Keynes – perhaps I should not do that because I am not a Keynes, but if I try nonetheless – one can point out that - to the extent that intellectual currents among economists played a role in this - the historical economists and the institutionalists in the 19th century were more successful in the 19th century on the basis of simple theory and pragmatism than the analytically more sophisticated Ricardian and later neoclassical economists, for the United States and Germany, both starting from a lower level of per capita production, would overtake the United Kingdom as regarded the strength of industrial production.

3. Logical and historical time

Pasinetti mentions as fourth characteristic of Cambridge economics: “Non-ergodic (in place of stationary timeless economic systems)”. He mentions that Davidson introduced the term. Ergodicity is a term taken from statistical physics, first used in thermodynamics by Boltzmann. It originally meant that the particles of a perfect gas would move in a random manner such that, in a given volume, all possible states would be reached approximately in the long run, and hence it would, once disturbed, return to its former state approximately, whereas, in the non-ergodic case, interactions between the particles could lead to a qualitative transformation like, for instance, in the formation of a magnet. Initially, the molecules have magnetic moments that point in all directions and cancel on average. After a phase transition, induced by a change of temperature, they line up so that they form a macroscopic magnet, and the system does not spontaneously return to its former state. This path-dependence is called hysteresis. None-ergodicity is therefore nothing but a fancy expression for the irreversibility of processes and hence for a simple form of historicity which is not due to conscious action but to physical laws. I suppose it has become a catchword for economists, because their theories treat economic agents like automata with unchanging reaction patterns such as profit maximisation or satisficing behaviour, while human history has to deal with individuality. It is not a good metaphor for Keynesians, for animal spirits stand for human inclinations that change with historical contingencies, not for the physical properties of molecules that are inanimate. *Dvoskin and Trabucchi* start from Joan Robinson's opposition between history and equilibrium, a stable equilibrium being a state to which one returns, while we wander off into an uncertain future in real history.

The question now is: how can theory and history be compatible at all? Mathematics, physics, even Darwinian evolution describe abstract phenomena and processes that may help to explain history out there, but they are not themselves historical, even if they describe irreversible transitions like magnetisation or events in the struggle of survival of species.

Uncertainty and expectations were the decisive argument for Joan Robinson who questions the usefulness of equilibrium analysis: "As soon as the uncertainty of the expectations that guide economic behaviour is admitted, equilibrium drops out of the argument and history takes its place" (quoted in Dvoskin and Trabucchi, p.XXX).

This statement provokes questions. First, is the equilibrium not stable after all, if there is little uncertainty and expectations are formed on the basis of unchanging data? Such situations are conceivable, of course: classical political economy would regard the technique and the real wage as given. Normal prices would then be defined under competitive conditions which led to a uniform rate of profits. The same holds for traditional neoclassical theory, according to which the choice of technique depended on profit maximisation and distribution on preferences, in particular time preference and the disutility of labour, on condition that the alternative methods available were given and known by the entrepreneurs in the respective sectors and that the preferences of households also were given and stable (I here leave aside objections derived from capital theory; they will be discussed later). Dvoskin and Trabucchi correctly point out that the prices so defined are a theoretical concept; they predict actual prices only if a whole set of conditions is fulfilled, starting with the homogeneity of products, the uniformity of prices and factor prices, and special conditions must be added, specific for the theory. In the classical case, the composition of output must correspond to effectual demand, which is determined in another part of the theory. It is historically given, we may say here, and the coincidence of the expected and of realized returns of the investors is assumed. What this means for the theory as an element to predict the future will have to be considered later. Neoclassical theory is not open in this same sense. Quantities are endogenous, except for the endowments, and traditional neoclassical theory took the value of total capital as given, with the sectorial amounts of capital needed for reproduction as endogenous magnitudes, so that a uniform rate of profit could be assumed, contrary to the modern Neowalrasian approach, where endowments are inherited from the past and expectations are formed looking to the future without any lessons being taken from experiences in the past.

The question then asked, common, I believe, both to the classical and the old neoclassical approach, is, whether this equilibrium, based on stable givens, results in stable prices, if the equilibrium is disturbed. It should be stressed once more, as far as the classical equilibrium is concerned, that Pasinetti is less interested in this technical question than in the normative perspective: under what conditions, regarding distribution and employment, such an equilibrium is socially acceptable, and if it has deficiencies, how they can be mended, in particular, how full employment can be reached. In a more theoretical perspective, both types of equilibria have in common that the theory must treat the question of stability as an *axiom* of the theory, for the possibilities of disturbances and of the ways how the system can adapt to them are endless. When Adam Smith talks about market prices gravitating to his natural prices,

he talks, for instance, of a beleaguered city in which there is a market price even for the meat of rats. Prices return to normal, when the war ends. There is a so-called Walrasian approach describing how prices react if one starts from false market prices, a Marshallian approach, if quantities adapt, there are cross-dual-dynamics, there are disturbances due to imperfections in competition, there are competitive processes leading to the homogenisation of products, while others lead to diversification. Classical and neoclassical economists have discussed such matters *con amore*, singling out a few stability problems that seem to be of special theoretical interest. The most important in our context is connected with the debate about capital theory. It does not concern the micro behaviour of prices but a macroeconomic relationship. If, in neoclassical theory, the possibilities for the choice of techniques are such that the profit maximising technique tends to be associated with a higher capital labour ratio, if the rate of profit is increased, the neoclassical mechanism for stabilizing the labour market cannot work. For if the rate of profit increases and the wage rate has fallen, for instance in consequence of an immigration, the increase of the intensity of capital will, with a given endowment of a capital, lead to a further reduction of employment so that unemployment gets worse. The outcome is the simplest consequence of reswitching and of non-neoclassical Wicksell effects. The effect, however, is rare, and the critique must be modified (Schefold 2020).

This, with perhaps little differences of emphasis in details, is common ground between Dvoskin and Trabucchi and myself. They go on to consider neowalrasian equilibria, with dated commodities, which are therefore intertemporal with a finite or infinite time horizon, and with given endowments not only of labour and land but also of produced capital goods, to be used in subsequent periods, so that, because of their contingent composition, the rate of profit can not be uniform from the start. They say that the difference between theoretical and actual prices here disappears. Perhaps this is an exaggeration. The theoretical postulate of a uniform rate of profit has, so it seems in the beginning, disappeared, but other theoretical postulates remain, like the homogeneity of prices for homogeneous products, which one does not encounter in markets where sellers try to get special prices and buyers try to obtain special conditions and where, on average, homogeneity perhaps results but cannot be assumed. I should rather say that the *neowalrasian equilibrium is a special kind of equilibrium of market prices*, to use the classical terminology and, again in special conditions, it converges towards a system with a uniform rate of profit, that is, if there is a regular supply of the factors, stationarity of preferences and an infinite horizon. The system then tends to a classical equilibrium, which is still of a special kind, in which distribution is determined by supply and demand and in which full employment obtains. It is also special as a market price model, in that prices from homogeneous goods in the same location and at the same time are assumed to be homogeneous. Dvoskin and Trabucchi cite interesting examples of neoclassical economists who, in the endeavour to render their market price model more realistic, invent new assumptions and, in

particular, shorten the time period ever more. A classical example was the agricultural year, which appears in the beginning of Sraffa's book. Here we find the Hicksian week, we find day trading, one may refer even to machine trading, and as the time periods get shorter, the number of commodities to be distinguished according to date multiplies.

What has become of historical time? The hope to achieve realism by means of successive approximations is often illusory, in that what is gained by this additional sophistication to represent a specific phenomenon is lost through the introduction of another abstraction. Nonetheless, we cannot do better. As regards the classical approach, the paper nicely describes how Sraffa dealt with uncertainty by providing his protoeconomic scheme after assuming that the system is capable of self-replacement, but virtual self-replacement does not mean that an actual system continues to reproduce undisturbed. There may be an upswing, a crisis or there may be exogenous events. What the proto-economics scheme teaches is how to order reality with coexisting techniques, with joint production, with commodities that are not really homogeneous. The task of finding the dominating technique, therefore to discover what industries really produce and what is only a by-product or even waste turns out to involve sophisticated mathematics. Confronted with real data and actual industries, the task of identifying the underlying Sraffa system is not trivial. The man from the moon, which young Sraffa wanted to interview to solve this task would probably be quite at a loss, and taking snapshots (the metaphor of the photographer) is also somewhat ingenuous; the fundamental forces governing the economy are not so easily discovered. The man from the moon would not know whether CO_2 or NO_x in the exhausts of cars were free wastes or commodities to be paid for; he would have to read law books and newspapers and it would not do to register material flows. The dominating technique cannot be identified by means of a snapshot. What is the dominant technique in electricity production? Wind, solar panels, nuclear power or still coal? The metaphors of the snapshot and man from the moon may serve to attract students and may help them to comprehend simplifying assumptions, but they should not be used to create the illusion that the gulf that separates the model from its application in concrete circumstances, involving institutions, can easily be bridged. Sraffa was wise to refrain from publishing the metaphors. Protoeconomics is an expression formed after protophysics (Poser 2012, p. 96), a name for constructivism. We have to make our concepts by synthesizing elementary intuitions, and we understand the conceptual tools we have made. Then we enter history and a different kind of understanding becomes necessary. We have to understand the rationale for the genesis of the institutions we observe and to fathom the motives of the agents we encounter. What we experience is a historical process, which we try to understand, and we use protoeconomics as a framework only to order our thoughts.

4. Interdependence

Pasinetti certainly is right in asserting that all Cambridge economists share the desire to identify the causes of different economic developments and are not easily satisfied with the assertion that there is general interdependence, although, in a sense, this is true and some problems cannot be treated adequately without representing the relationships of interdependence. A simple example usually convinces my students. Having explained Sraffa's equations for single product systems, I define a numéraire, so that only one degree of freedom remains. I identify it with a monetary commodity, gold, and I observe that, from a formal point of view, the system could be closed by fixing one of the relative prices – the state prescribes that a kilogram of apples shall cost as much as a kilogram of cauliflower. Does anybody believe that the rate of profit and real wages would adapt? Of course, nobody, although the conclusion is mathematically stringent. So we have to work out how the deeper forces operate, which we feel must be there, and the task is to configurate the analytical apparatus to express them. Pasinetti then goes on to mention cumulative causation, which we may describe as different causal forces, sequentially reinforcing each other.

Bellino and Nerozzi report that the young Pasinetti was interested in transforming interdependent systems of equations so that they could be solved sequentially – this means, in the linear case, to transform the matrix describing the constraints into a triangular shape. Then came the study of the classical economists, who would visualize the successive determination of interdependent magnitudes such as values and prices and the distributional variables. The discourse here returns to core and periphery, to causality in Ricardo, starting from the corn model, and to Marx in the early formulations of the transformation problem. On the one hand, it is clear that Marx approached the problem sequentially, on the other, the solution was not satisfactory in his case, precisely because he could not explain the interdependence of the system of prices of production, starting from values. But if one starts from an interdependent system of prices of production, the system of values appears to be redundant from the point of view of price determination.¹

Bellino and Nerozzi then show that the standard commodity can be used to give distribution prior to the formation of prices, insofar as the standard commodity allows to say what the real wage, expressed in terms of the standard, will be, if the rate of profit is given exogenously, and it can be shown in a transparent way how relative prices and wages change with changes of this rate of profit. In the present perspective, the chief merit of the derivation of the standard commodity therefore consists in the possibility it

¹ Nonetheless, there are more possibilities than has been thought to relate the value system and the price system in such a way that profit appears as a redistribution of surplus value. Marx wrote that this relationship held “on average” and this can be confirmed, if one assumes that the technology is random. (Schefold 2019)

offers to go from distribution to prices and from one distributional variable to the other sequentially.

The authors then turn to Keynes. There is a general interdependence of the variables in the *General Theory*, but we may distinguish more direct and stronger causal relationships from weaker ones, considering sequentially the multiplier, the dependence of investment on the rate of interest and other forces and considering finally the money market. A crucial variable is effective demand.

Something similar can be observed in post-Keynesian theory, where it is concerned with the long run, and here we encounter Pasinetti's own contribution, which the authors could have discussed more extensively, but, perhaps, being younger, they do not realize how much the general public of economists was struck by Pasinetti's derivation of the Cambridge theory of distribution, showing that total profits in the steady state really only depended on capitalists decision to invest and to save, even if workers also saved (Pasinetti 1974); we mentioned this worker who saves and owns capital as a new type above. The savings propensity of the workers would be less than that of the capitalists, but if they saved, they owned part of the capital stock. A steady state then was possible, if what they saved less from their capital incomes was compensated by their savings from wages, so that the rate of their total savings was equal to that of the capitalists. The income distribution between capital and labour could remain the same through time. Pasinetti introduced this behaviour as if it were a norm, thus anticipating his later methodology. The neoclassicals speculated that the workers might save more and might therefore in the long run accumulate more capital than the capitalists so that they would end up owning all the capital in the economy. It was a wonderful outlook at the time of the luckily peaceful coexistence of Soviet communism and capitalism. At present, it seems that the wealth distribution is getting ever more unequal so that a norm, and corresponding political action, are called for to prevent a relative immiseration of the workers. Cambridge economics continue to be particularly relevant in this domain. History matters.

Pasinetti moves from here to the thesis that macroeconomics comes before microeconomics. He illustrates it quite extensively with the works of the Cambridge economists. *Milgate and Eatwell* continue the discourse with a very learned paper about the history of macroeconomics after Keynes, without forgetting that, under different names, the subject had been discussed a great deal in the earlier history of political economy. More recently, Lucas created a watershed with his introduction of rational expectations in the debate about the Philipps-curve. It is difficult to understand in retrospect, they observe, why this critique was not advanced earlier. If expectations played a role in the Keynesian models, why did government decisions and anticipations of such decisions not affect the formation of the outlook of the agents in the play? The fashions in macroeconomics now began to change rapidly, but, at the

same time they were also the researches about general equilibrium theory, which resulted in the Mantel-Sonnenschein-Debreu Theorem. It was not assured any more that market excess functions would be falling, hence equilibria, though they existed, could be violently unstable. Milgate and Eatwell use this possibility to question the DSG-models as a foundation for macroeconomics, and they opt for a return to Keynes.

There is no room here to comment on the manifold details of this exposition; I prefer to look at the principle, which is here announced, macro before micro. It really means, in a more traditional formulation, that the whole is more than the parts. Where it is really used in Keynes? There is the multiplier; investment determines saving in the closed economy. This is based on the consumption function, which has a microeconomic basis, for it results from the aggregation of the consumption functions of the individual households. The average household may be replaced by a representative household, without affecting the principle that the individual decisions determine the outcome. Similarly, the investment function seems to be derived from the aggregation of the investment decisions of individual entrepreneurs, who calculate the expected return on investment, given the rate of interest and expectations of future proceeds. But Keynes here opens his theory for another determinant, the famous animal spirits, and these are a collective phenomenon, even if they affect each entrepreneur in a specific manner, depending on individual psychology, the cause is a swing of a general opinion, due to some exogenous event, which is perceived by the business community as a whole. He explains the process in more detail in the context of the stock exchange, where people speculate, anticipating how the news of an event are taken in by others. The theorists summarize Keynes's analysis of mass psychology by speaking of the "beauty contest" and "herding". Post-Keynesians generalize the approach, when they discuss growth and cycles. Investment influences not only the current level of activity, but the rate of growth determines distribution, and national characteristics may well influence the growth rate.

I don't see why one should not interpret this turn of the theorists as a partial acceptance of historicism. Traditions and systems of education result in dispositions in economic matters, which are shaped by national institutions and are of relevance for development.

It must be remarked here that Max Weber, one of the founders of sociology, vehemently opposed the facile use of collective notions of the Historical School; he adopted the methodological individualism of Austrian economics. I am inclined to take sides in this debate with the Historical School, but one should be aware that such a stance involves a change of method. If one intends to make use of collective notions, one has to make plausible that they exist and this means that one must reconstruct a social reality in a convincing manner. We are here not talking about the usual aggregation from given and behaviourally stable microeconomic elements. Rather, the

approach should consist in a comprehensive representation of a complex phenomenon, based on *description*, which is plausible because it reflects an understanding of motives. It therefore resembles more a work of art than an analysis, even if it possible to summarize the characteristics in the end in a number of indices, as in the comparison of different economic systems, of models of regulation or economic styles – all concepts that stand for somewhat different, but in principle similar approaches to the problem of characterizing collective phenomena that cannot completely be reduced to microanalysis. We can observe such endeavours in several subdisciplines of economics and in several currents of the economic schools. Pasinetti refers to Kaldor and his stylized facts and he certainly is right that the principle to let macroeconomics precede microeconomics is a Keynesian heritage in the Cambridge School that reflects a broader principle.

5. Stabilizing growth and employment: how and why?

Pasinetti can easily cite evidence that Cambridge economists would regard disequilibrium and instability “as the normal state of the industrial economies” (Pasinetti 2007, p. 229). The statement is deliberately vague, for there are different equilibrium concepts in economics. The most striking disequilibrium is unemployment (however that is defined), but Keynes wanted to show that unemployment could be persistent, so that he would speak of underemployment equilibria. *Wirkierman* leads step by step from Pasinetti's methodology and his formulation of the theory of effective demand to the discussion of the equilibrium concepts, growth and structural dynamics.

If prices can adapt to clear markets, what is the obstacle? One answer is to say that markets for future goods are largely absent. Hence producers do not know, indeed, cannot know how much capacity is needed to satisfy future demand, so that, in the absence of markets for the future, present market for investment goods may clear but the quantities are not adequate for future demand and the incomes generated are not adequate for a demand for current output, which would lead to full employment.

Pasinetti, however, has something else in mind: he is no doubt right that most economists regard unemployment as a short term phenomenon, and he refers to Solow who felt that he could be a Keynesian for the short run and a neoclassical in the long. Pasinetti counters (p. 231, note): “This statement, it seems to me, has a sense only in the context of dynamics of the *proportional* (Pasinetti's emphasis) type, which is never the case in industrial systems.” Why do structural dynamics afford a reason for long term unemployment, which would not be captured by the Keynesian analysis of the short run?

Pasinetti gives an answer in the subsequent section on “Necessity of finding an appropriate analytical framework for dealing with technical change and economic growth. He refers to Keynes's famous essay of 1930, on Economic Possibilities for Our

Grandchildren (Keynes 1972 [1931] pp. 321-334), in which he points to the growth of productivity and output that he expected to result in the coming generations (and in this, he surely was right), but also to technological unemployment. The growth of productivity would be faster than the discovery of new uses for labour. Wirkierman's essay traces the way by which Pasinetti, starting from classical economics and post-Keynesian growth theory, arrived at a detailed description of technological unemployment within the framework of his structural dynamics.

Hagemann shows that Pasinetti always emphasized structural change; steady states are only stationary systems at a higher level. Pasinetti thus analyses the conditions of under which full employment can be kept, if there is technical progress and demand changes moreover in its composition because of Engel curves. Sectors are vertically integrated in order to avoid a too detailed discussion of the composition in the demand for intermediate goods. A problem is the representation of the different growth rates of different integrated sectors. It becomes easier, if one abstracts from circulating and fixed capital so that production takes place by means of direct labour as in Pasinetti (1993).

Hagemann's comparison of Pasinetti and Lowe is of special interest. Pasinetti stresses the need to discuss institutions, once the system of structural growth has been described and understood. The transition from planned economies to the market affords a splendid example of Lowe's analysis of policy instruments; the choices made by the several Eastern European countries were quite different, and the choices of instruments they made had consequences which can still be felt today.

In the end, Pasinetti insists on the social concern, which the Cambridge economists had and have in common. He is here not concerned with political positions, which ranged from moderately conservative to Marxist, but he mentions that a neoclassical economist in Cambridge, James Meade, felt to be on the left. Pasinetti here means an ethical orientation. This could take different forms and have different origins. The editors of this volume had the good idea of asking a social scientist of the same university as Pasinetti's for a depiction of his social views and his engagement. The Università Cattolica del Sacro Cuore in Milan is not ideologically neutral and demands an ethical commitment from the students and even more from the professors. It turns out that Pasinetti himself has not so much worked on the institutions that should complement his theoretical scheme, but on the moral principles to be observed. It is, it seems to me, an essential part of his contribution to bridging the two sides of the separation theorem. Capital has a social role not only in the supply of goods, but to procure jobs for the labourers. Capital must be accumulated. Pasinetti does not argue in favour of a nationalisation of industry, he is sceptical with regard to a Third Way; he relies on a reformist control of what he calls the 'natural' system. He says that the term is taken from the classical economists. Others found nothing "natural" in the economic

concept of a normal price, as discussed by Smith; the “natural system of liberty” came into being as a historical creation. The term may have appealed to Pasinetti nonetheless because of the scholastic and Aristotelian tradition; an institution is natural, if it is appropriate.

Claudia Rotondi speaks of Pasinetti's “cultural roots” (p. XXX). She regards as Italian the nexus between theory and strategies, the interest in economic dynamics, the emphasis on the institutional side of a theory and the link between economics and ethics. She then traces the intellectual origins of the social concern and points to the specific tradition of the Catholic University, founded by Toniolo, at the time when the catholic church under the influence of the Encyclica *Rerum Novarum* took up the social question of the 19th century. Pasinetti himself enunciated a number of catholic principles that are in contrast with dominant economic theory, of which the last is the one most obviously opposed to the standard economic utilitarianism: the “essentiality of free gift (without coercion and without humiliation)” (p. XXX).

I once was invited to the Cattolica with the task of explaining Weber's theory of the origin of modern capitalism (Schefold 2014) at a conference dedicated to Amintore Fanfani, formally a professor of economic history at the Cattolica, later a famous Italian politician, Prime Minister and President of the General Assembly of the United Nations. Fanfani sought the origin of a capitalism in the late Medieval Italian city republics and contrasted the spirit of capitalism with the catholic doctrine. We need not go into the usury debate. He would emphasize the changed, indeed perverted motivations, which came along with the rise of the capitalist spirit. It seemed useful if sons in the family became priests, if that secured incomes, and if the daughters became nuns because one then could save the dowry. Catholic dedication to work and working for gaining wages are not the same, fear of loss and forgetting solidarity are incompatible with the catholic vision. Catholicism educates to be honest, but not for utilitarian reasons. Life without capitalism seems not to be possible in the present world, however hence compromises are inevitable, and Fanfani prepared for such a compromise and helped to shape it within the Christian Democratic Party. A similar conception existed in Germany in the form of the social market economy, which also had taken inspiration from catholic social thought. Fanfani had coined the famous phrase in the Italian Constitution: “L'Italia è una Repubblica democratica fondata sul lavoro”.

In a paper at a conference entitled by this same phrase Pasinetti gave a paper on the role of labour in the industrial economic systems Pasinetti (1986). The exposition runs from labour in Adam Smith to Marginalism and the present. A crucial step is the consideration of the catholic doctrine in *Rerum Novarum*, the encyclical by pope Leo XIII. of 1891, already mentioned, in which he states that the teaching of the Church does not declare, which economic theory is appropriate, but it notes the abstract character of all economic theory, is itself pragmatic in its judgement of economic

institutions, but “Le argomentazioni si riducono ad affermare che ci deve essere qualche cosa di sbagliato nelle argomentazioni teoriche (o nelle istituzioni della nuova società industriale), se esse dann luogo a conclusioni.... che sono moralmente inaccettabili². Pasinetti thus identifies with the moral criticism of the Church, on the other hand he criticises the abuse of social institutions, where they are obstacles to the free movement of labour and thus contribute to unemployment.

These short hints must suffice to indicate where Pasinetti's social commitments are anchored. In the end, they overlap with those of the other Cambridge economists of his generation and the generation before, although their cultural roots and political aims were different and more diverse than the variations of their theory. To appreciate the group of Cambridge economists, to whom Pasinetti dedicated his book, one must see both, as Pasinetti does, one of the last witnesses. We are grateful for what he has added, but also simply for his testimony.

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² The arguments can be reduced to the claim that there must be something erroneous in theoretical arguments (or in the institutions of the new industrial society) if they result in conclusions....which are morally unacceptable” (my translation).

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