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**REVISITING CANTILLON'S ADMIRABLE THEORY OF
DISTRIBUTION AND VALUE**

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REVISITING CANTILLON'S ADMIRABLE THEORY OF DISTRIBUTION AND VALUE A Misinterpretation Corrected*

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Abstract

This paper returns to an issue I discussed in a review article published some twenty years ago** The subject under discussion was Anthony Brewer's 1992 study*** *Richard Cantillon: Pioneer of Economic Theory*. That review provided a vehicle for consideration of Cantillon's theory of value, particularly for questioning Brewer's rejection of Cantillon's analysis, on the ground that he (Brewer) understood it to propose a dead-end "land theory of value" which attempted to account for equilibrium relative values in terms of quantities of "land embodied". In the present paper a fuller critique of that land-embodied interpretation of Cantillon's value theory is presented. From what might be described as a Sraffian perspective, we – contrary to Brewer - interpret Cantillon as offering a perceptive and valid analysis of the operation of the market mechanism in the case of a surplus producing system in which distribution is determined - exogenously to the price system - by social factors of property ownership and economic power.

We suggest that, given Cantillon's view (in a pre-industrial context) of land as a country's principal economic resource, he may be said to have told a general story associating equilibrium commodity prices ("intrinsic values") with the quantity *and quality* of land employed in production. Appreciating that an approach in terms simply of physical quantities of land could not serve to explain relative values under the complexity of real world conditions, he expressed his understanding in the form of a "cost of production theory" explaining intrinsic values as represented by the *costs* – comprised of wages and rents measured in money – incurred by entrepreneurs for the use of heterogeneous inputs of land and labour. Labour costs can be translated into land costs via Cantillon's "Par". These production costs reflect both the use of resources and the balance of economic power within society. Thus, on the subject of "intrinsic value" we read Cantillon as following not a crude land-embodied treatment, but instead a cost of production approach, an approach which would be further developed by the Classics and Marx as appropriate to later economic and social conditions.

Key words: Richard Cantillon's *Essai*; Value and Distribution; the "Par"; the alleged "land theory" of value.

JEL Classification: B11

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** Grieve, Roy H (1993), "A Course between Scylla and Charybdis: Cantillon's Theory of Distribution and Value". *Journal of Economic Studies*, 20 (6): 44-56. (Much of what follows here is reproduced from the original article by permission of Emerald Group Publishing.)

*** Brewer, Anthony (1992), *Richard Cantillon: Pioneer of Economic Theory*. London: Routledge.

1. Introduction

Ever since William Stanley Jevon's rediscovery¹ in the 1880s of Richard Cantillon's forgotten *Essai Sur la Nature du Commerce en Général* (probably completed by the early 1730s, but not published until 1755) the reputation of the Irish-French banker and trader² as an outstanding pioneer of economic theory has been secure. Praise, mixed with astonishment at the modernity of his conception, has been heaped upon him.

Scholars have found outstanding merit in Cantillon's work. Jevons himself (1881) referring to the "very remarkable Essay" identified it as "the true cradle of Political Economy". Edwin Cannan thought Jevon's assessment "not in the least overdone". (Henry Higgs, 1931). E. A. J. Johnson (1937) remarked that "because of its skeletal logic (and also because of the richness and accuracy of the detail) Cantillon's essay surpassed any contemporary book". Joseph Schumpeter (1954), while taking the view that Jevons had gone a bit over the top (Cantillon, it is true, can hardly be seen to point directly in the direction of Walras!) nevertheless expressed very high regard for the *Essai*. Referring to Cantillon's depiction of the circular flow of income and expenditure, he says, "Cantillon was the first to make this circular flow concrete and explicit, to give us a bird's eye view of economic life". And he rates Cantillon's monetary analysis as a "brilliant performance . . . in most respects . . . unsurpassed for almost a century." To William Letwin (1963) the *Essai* "stands out by far as the most powerful work on economic theory up to its time". Joseph Spengler (1964) characterised Cantillon as "the first of the moderns". Members of the Austrian school – for instance, Vincent J. Tarascio (1985) and Murray Rothbard (2010) - greatly admire Cantillon's setting of the operations of the "entrepreneur" (his word) in a world of uncertainty. Anthony Brewer, in his recent (1992) study of Cantillon, recognised him as "a real theorist, of a quite modern kind, with a clear vision of the economy as an interrelated system and a strikingly realistic analysis of how the system worked". (Nevertheless, Brewer finds a serious deficiency in Cantillon's analysis.)

In this paper we direct our attention not to Cantillon's undoubted theoretical achievements - such as his discovery of the income-expenditure circular flow (as adopted by the Physiocrats), his analysis of money and finance, prices and the international specie-flow mechanism (on which David Hume may have drawn) or his explanation of income differentials (borrowed by Adam Smith) – but to an element of his analysis which has, at least by some authorities, been less well received. We refer here to his theory of value which has been severely criticised as wanting or simply wrong-headed. Commentators have interpreted Cantillon as attempting to explain the equilibrium relative values of commodities (what he called "intrinsic values") as corresponding to the quantities of land, measured in physical units, which have contributed to the production of these commodities. In recent discussions of Cantillon's theory of value both Marian Bowley (1973) and Anthony Brewer (1988, 1992) have argued strongly that this alleged land-embodied approach can only lead only up a theoretical *cul-de-sac* – for the reason that there is evidently an insuperable problem in making commensurate *in physical terms* (independently of prices) different sorts of land which have quite different characteristics and properties. We note at this point that although by no means all students of Cantillon's work identify heterogeneity of land as posing an insurmountable difficulty for Cantillon's analysis of value, Bowley and Brewer do so with such emphasis that the issue simply cannot be overlooked.

In an earlier article (Grieve, 1992) I took the view that the Bowley-Brewer interpretation was a misreading of Cantillon: the present paper advances that argument further by suggesting that Cantillon himself was well aware of the limitations of a land-embodied explanation of relative values. It would appear that when he moved on from preliminary exposition of the basic elements of his conception to consideration of the actual working of a realistic and complex economy involving heterogeneous land and all sorts of exchanges amongst a multiplicity of goods, Cantillon recognised that it is simply not possible to measure, and make commensurate for the purposes of exchange, commodity values in terms of quantities of non-homogeneous land. He realised that the only practicable procedure was to express relative values in terms of money as the unit of account, by reference to the costs incurred for the use of resources – i.e. by reference to the money prices paid by entrepreneurs for the hire of land (rents) and of labour (wages). In other words, the situation is that the quantities (by value) of heterogeneous land inputs actually depend on the value of what the land produces (and how that product is distributed) not *vice versa* that (physical) quantities of inputs determine the values of outputs. If that is so, Cantillon's theory of value is properly described as a cost of production rather than a land-embodied theory.

Furthermore, it is clear from the *Essai* that costs of production (rent and wages) depend on relations of economic power within society: the landlords who appropriate rent, leaving a bare subsistence for the workers, are able to do so because they own the community's essential productive resource. With given resources, who gets what depends on socio-economic power; distribution has nothing to do with (marginal) productivity, but everything to do with the economic power derived from the possession of property.

It does seem somewhat surprising that a theorist of Cantillon's acknowledged brilliance should, as alleged by Bowley and Brewer, handle a core element of his model as inadequately as they understand him to do. We therefore need, in the light of the Bowley-Brewer contention, to examine in some detail Cantillon's treatment of the key questions of distribution and value.

2. Cantillon on distribution and value

We now take up the issue on which we wish to concentrate – the question of the acceptability or otherwise of Cantillon's theory of value as presented in Part I of the *Essai*. Does it amount to an explanation untenable - except in the unrealistic case of homogeneous land - to the effect that relative commodity values correspond to physical quantities of "land embodied", identified independently of values? Or did Cantillon actually subscribe to the quite different explanation that relative commodity values are made up, *given a predetermined distribution of output*, of the monetary costs (values of rent and wages incurred in production) which have to be paid by the entrepreneur to acquire the services of land and labour?

We turn now to Cantillon's model. It was with the operation of a primarily agricultural economic system that Cantillon was concerned. Farming is the principal activity, supported by the work of craftsmen – blacksmiths, tailors, etc – in the villages and towns, with some manufacture of luxury goods in the cities. The basic institutional feature of the economy in question is that land is privately owned by a fortunate minority of the population. Profits, as

related to the value of capital invested, do not appear as a category of income.³ Rent and wages are the only income categories. Property relations are of fundamental importance. Cantillon is bluntly realistic about how things are:

It does not appear that Providence has given the Right of Possession of Land to one Man preferably to another; the most ancient Titles are founded upon Violence and Conquest. . . . But howsoever people came to the property and possession of Land we have already observed that it always falls into the hands of a few in proportion to the total inhabitants.

(*Essai*: I.xi.i)⁴

The economic significance of this state of affairs is that the proprietors are able to extract as rent, from those who actually work the land, a portion of the produce. The necessarily weak bargaining position of the landless majority leaves them with no more than subsistence at a conventional minimum standard (barely enough for a family to survive on). Should in any circumstances labour incomes rise above that level, Cantillon anticipates Malthusian consequences: “Men multiply like Mice in a barn if they have unlimited Means of Subsistence.” (*Essai*: I.xv.26) Cantillon does however recognise a conventional element in the going rate of real wages, indicating that the reward of labour varies according to what is customary – “the mode of living” - in different countries.

As mentioned above Cantillon identifies the circular flow of income and expenditure. The proprietors of land receive rents from their tenants and spend these rents both on necessities and luxuries. As the landowners enjoy the only incomes in excess of a basic subsistence level it is their preferred spending that determines the utilisation of the surplus. These expenditures provide markets for the craftsmen in the towns and the farmers on the land, who also buy from each other necessities that they produce. Sales receipts received by the farmers directly from the proprietors and indirectly via the craftspeople are returned to the landowners in the form of rent, which in due course is re-spent on agricultural and manufactured goods. Through the circular flow, that is to say, while the workers engaged in agriculture and manufacturing “spend what they get” the landowners “get what they spend”⁵

Viewing the situation from the perspective of a landowner Cantillon sees land as the ultimate, “basic” resource of the country. Land, coupled with the work of labour, directly produces commodities of all sorts. To the extent that land is allocated to the support of labour, the workers gain that support “at the expense” of the landlords who are thereby deprived of a portion of the produce of their land.

Having described the essential structure of the economic system as he observes it, Cantillon then goes on to show how, via the price system, demand determines the usage of the country’s resources. Given that necessities and luxury goods produced within the economy are exchanged in the markets among landowners, farmers and craftsmen, Cantillon offers an explanation the working of the price mechanism. Cantillon’s impressive understanding of role of market forces is demonstrated by his appreciation that there exist two alternative ways of matching production and the use of resources to the pattern of final demand. One is by the issue of orders within an administrative system – as, for example, when the landowner of a slave-employing plantation instructs the overseers of the slave workers as to what he requires to be done – in effect, a command economy. The other way

of organising things is through the market. If, *ceteris paribus*, the overseers were to become “entrepreneurs” working on their own account in a market context, and the slaves were free labourers, these entrepreneurs (Cantillon, incidentally, was the first to use the term “entrepreneur” in the modern sense) would compare (in conditions of uncertainty) expected proceeds from the production and sale of different goods, relate returns to costs and as a result, under competitive conditions, supply would be brought into line with the pattern of demand.

In analysing the working of the price mechanism, Cantillon distinguishes between current market prices and what he calls “intrinsic values”, the latter being (in effect) equivalent to the “natural” (cost of production, equilibrium) values of later classical usage.⁶ “The market value . . . of Merchandise or Produce is sometimes above, sometimes below the intrinsic value, and varies with their plenty or scarcity according to the demand.” (*Essai*: I.xvii.3) When markets are out of equilibrium, quantities demanded and supplied respond to changes in market prices, which in turn adjust to correspondence with intrinsic values.

As regards the intrinsic values of commodities, Cantillon relates these to usage of land and labour. Cantillon observes: “The Price and Intrinsic Value of a thing in general is the measure of the Land and Labour which enter into its production”. (*Essai*: I.x, heading). The proposition that intrinsic values reflect – in some sense – usage of land and labour is re-emphasised several times in the course of Cantillon’s subsequent discussion.⁷ Thus for instance (giving his fullest definition of intrinsic value) Cantillon writes: “I believe it will be understood [from illustrations given] that the price, or intrinsic value of a thing, is the measurement of the quantity of land and labour entering into its production, having regard to the fertility or productivity of the land, and to the quality of the labour.” (*Essai*: I.x.7) Cantillon is stressing that we come by the goods we want only by drawing on the country’s resources of land and labour. As he put it:

The Land is the Source or Matter from whence all Wealth is produced. The Labour of man is the Form which produces it: and Wealth itself is nothing but the Maintenance, Conveniences and Superfluities of life. (*Essai*: I.i.1)

The term “Intrinsic value” can be construed as implying that through its production a commodity uses up and metaphorically “embodies” within itself some part of the community’s complementary sources of wealth, land and labour, (thereby of course precluding the use of these resources for other purposes).

Cantillon however goes a step further in his analysis of intrinsic values. Following Sir William Petty, he brings into the analysis the notion of a “Par” or equivalence between land and labour. Cantillon’s concept is however quite different from that of Petty. Petty was thinking in terms of making land and labour (and indeed capital goods) commensurate on the basis of their productive contributions in an attempt to specify as a quantity of a single productive agent the various resources used. Cantillon, on the other hand, relates labour to land not in terms of productive equivalence but links them by reference to the area of land which has to be devoted to the cultivation of foodstuffs and materials for the support of labour at the going standard. Reflecting the conflict of interest between landowners and labourers “the Par varies according to the greater or less produce of the land allotted to those who labour”. (*Essai*: I.xi.18) At issue is the share of the produce the landowner can

keep for himself; alternatively, how much land has to be given over to the support of those who work the land? The implication is that intrinsic values can be interpreted as corresponding to the *total* usage of land – indirect (via the support of labour) as well as direct – involved in production of commodities. Cantillon explains what he is trying to do:⁸

In Part I [of the *Essai*] an attempt was made to prove that the real value of everything used by man is proportionate to the quantity of land used for its production [direct use] and for the upkeep of those who have fashioned it [indirect use].
(*Essai*: II.i.i)

Illustrations are provided; for example:

In some Southern provinces of France the Peasant keeps himself on the produce of one acre and a half of Land and the value of his Labour may be reckoned equal to the product of Three Acres. But in the County of Middlesex the Peasant usually spends the produce of five to eight acres of Land and his Labour may be valued at twice as much as this. [The doubling is to provide for the labourer's family.
(*Essai*: I, xi, 12)

The theoretical relevance of the Par is that, in explaining the determination of relative values, it provides for Cantillon a means of translating labour costs into the underlying costs incurred for the use of the land which supplies means of subsistence. What lies behind Cantillon's interest, as an economic theorist, in a land/labour equivalence is his conception of land as *the* productive resource possessed by the nation. All output is seen as being derived from the land. Land is prioritised as it is by the produce of land that labour is supported; the number of people that can be maintained in a country depends on the amount of land which can be devoted to producing means of subsistence. (Conversely of course, the value of the Par determines how much of the product of the land may freely be disposed of at the whim of the proprietor.)

At first sight, this approach may very well suggest that Cantillon was proposing a "land theory of value", with the intention of explaining relative values by reference to physical quantities of land, directly and indirectly, embodied. That in fact is exactly how Marian Bowley (1973) and Anthony Brewer (1992) interpret Cantillon's account of intrinsic value - as a "land theory of value", analogous to the labour-embodied theory of Ricardo and Marx. Brewer (81) comments:

The land theory of value is . . . unique – no other significant economist has claimed that value is determined by the amount of land used in production, though several have held a labour theory of value.

To these critics this "land value" approach which they attribute to Cantillon is not only unique, but also wrong-headed. Their reaction is that Cantillon's line of argument is without potential – that there is no possibility of making general sense of a land theory of value (beyond the unrealistic scenario of the homogeneity of land). Bowley describes Cantillon's supposed land theory of value as a "physical input concept of intrinsic value" incapable of supporting a viable theory of value. The trouble with a "land theory of value", as identified by these commentators, is that the real-world heterogeneity of land means it is impossible

to make commensurate and aggregate in physical terms pieces of land of differing character and quality as constituting a specific quantity of "land in general". Pieces of land, of exactly the same area may be so different in terms of soil, location, drainage, accessibility, etc, - so different in their *economic* significance – that they cannot meaningfully be treated as equal quantities of a factor "land." To repeat, it does not make any *economic* sense to take together, say, five acres of land of type α and ten acres of land of a quite different character, type β , and say that we have then fifteen acres of "land in general". Such aggregation would however be required by a theory which seeks to explain relative commodity values in terms of physical quantities of "land embodied".

There can be no doubt that when account is taken of the heterogeneity of land as used in the production of all sorts of different things, the argument against the applicability of a land-embodied theory is a conclusive one. *But the real issue here is this: did Cantillon actually attempt - as is alleged - to explain relative values by reference to quantities of embodied land?* In the opinion of the present reviewer critics such as Bowley and Brewer have got it wrong: the attribution of a land-embodied theory of value to Cantillon – whatever at first sight might seem to be the case - is incorrect. Not only that: it leaves the unfortunate impression that Cantillon's theory is something rather peculiar – a unique excursion in an odd direction which can hardly be of more than antiquarian interest; there is no recognition of the possibility that Cantillon offers an approach to the theory of value and distribution which not only escapes the problem with the labour theory of value but is at the same time free of the circularity of the marginalist treatment.⁹

It is our opinion - as expressed in Grieve (1993) - that there is arguably much more to be said for Cantillon's analysis than critics such as Bowley and Brewer allow. It would be regrettable if the *Essai* was to be dismissed as a brave pioneering attempt at a comprehensive picture of the working of an economic system – but an attempt unfortunately marred by serious deficiency. We need to examine in some detail Cantillon's treatment of distribution and value.

3. Intrinsic value

It is evident that Bowley and Brewer do not think highly of Cantillon's handling of the problem posed by the heterogeneity of land.

Thus Bowley (1973: 105-106): observing that land is not homogeneous, comments:

. . . therefore it is impossible to convert one piece of land into another piece of land in terms of some purely physical output scale. It is necessary to introduce some scale of values or prices of the different products of land. . . Cantillon . . . never discussed the problem of the relative prices or the values of different pieces of land at all, he merely referred to taking into account different qualities and fertilities of land in calculating intrinsic values. Thus he never considered the question "What is to be done with heterogeneous land in relation to intrinsic value, how is its quality to be assessed?" *It seems that Cantillon did not notice the existence of the difficulty.* He therefore, presumably, did not notice that heterogeneous land could not be handled in a physical input concept of intrinsic value and that

some means of pricing land, of valuation in the market sense, was required. . . . It is evident that this difficulty which destroys Cantillon's concept of intrinsic value as the general basis of a general theory of value has a marked family likeness to the difficulty arising from different capital structures which upset Ricardo's Labour-input theory. (Emphasis added)

Brewer (1988:12) takes a similar line, agreeing that Cantillon failed to find a satisfactory solution to the heterogeneous land issue.

In effect, Cantillon assumed that land could be reduced to a common denominator and treated as if were homogeneous, in contrast to his treatment of labour, where he was careful to explain the reasons for wage differentials.

He elaborates (Brewer, 1992: 68-70). (Emphasis added.)

Land is heterogeneous, as Cantillon realized, but heterogeneity only figures in his main analysis of value in the phrase "having regard to the fertility or produce of the land" appended to a mention of the quantity of land used to produce a good. *In effect, Cantillon assumed that land could be reduced to a common denominator and treated as if it were homogeneous.* This rather cavalier approach contrasts with his treatment of labour, where he was careful to explain the reasons for wage differentials. Heterogeneous land is, of course, a much more serious problem for his analysis than heterogeneous labour, since each kind of labour has a given real wage, which can be reduced to its equivalent in land. To solve the problem of heterogeneous land in the same way, different kinds of land must have fixed values relative to each other. That is what Cantillon assumed.

As we intend to demonstrate below, Bowley and Brewer have completely failed to appreciate that Cantillon was fully aware of the difficulty created by the heterogeneity of land, and recognising the practical impossibility of attempting to relate relative values to physical quantities of land embodied, adopted a simple and eminently practicable way around the problem – the procedure of measuring the intrinsic values of heterogeneous inputs in terms of the money costs – as rent and wages – of the land and labour employed by an entrepreneur in production. These rent and wage costs take account of both the quantity *and* the quality of the inputs.

Before we come to Cantillon's solution, note a complementary instance of Brewer's failure to grasp Cantillon's conception. With respect to Cantillon's treatment of mining, Brewer seems to get close to a proper understanding of Cantillon, then veers away. Brewer comments (1992: 69) that, according to Cantillon, it seems that a mine,

only counts as land if it commands a rent, which might imply that land was to be aggregated by its rent. From the point of view of the arithmetic of prices, of course, this must be true (prices must cover rents on the different types of land employed, plus other costs) but it risks reducing the theory to a tautology; price governs rent (for a mine, at least) and rent governs price.

There are two points to make here. (1) Brewer has in fact stumbled on the correct reading of Cantillon – that land is indeed “aggregated by its rent”. No-rent land does not contribute to intrinsic value, for the reason it does not contribute to production costs. Heterogeneous land *can* be combined as a single quantity of land – not in physical terms – *but by value* – via changes paid for its use. (2) There is no tautology involved. As this question of circularity is of central importance to our interpretation of Cantillon, and is touched on also by Bowley (1973: 105) as well as Brewer, we need to deal with it.

It would appear that Bowley and Brewer have not fully understood the economic implications of the social order portrayed by Cantillon. In the Cantillon model, costs of labour and land are pre-determined exogenously to the price system - reflecting socio-economic power within society. Wages are given at a conventional subsistence level; technology is as it is and thus is given also the potential output of any particular piece of land, and so therefore is the surplus product (if any) of land which goes to rent. Prices serve to give effect to the factors determining distribution. Landlords set a rent which ensures that their tenants retain only some part (corresponding to the conventional wage) of the produce; from the point of view of the tenant-farmers rents are a pre-determined charge on their work.¹⁰ Farmers must accordingly set their prices so as to cover from sales receipts (net of other costs) the rents they are obliged to pay. Manufacturers’ prices must likewise be able to cover the rent element in the prices of agricultural produce they buy. Allowances for rent charges are thus built into the prices at which goods are offered on the market. That situation eliminates the potential ambiguity highlighted by Brewer and Bowley: commodity prices are governed by rent, not *vice versa*.

From our perspective Bowley and Brewer have got hold of the wrong end of the stick. They suppose that it is necessary to know the quantity of land (of whatever sort) that is used in production, in order to go from that quantity to the value of the output produced (just as the labour theory of value links the quantity of labour employed in its production directly to the value of a commodity). What we are suggesting is that it is the exogenously determined prices paid (in the present and over past time) for inputs of land and labour which together constitute the “intrinsic value” of the commodity.

Tony Aspromourgos (1989: 365) likewise rejects the allegation of circularity and justifies a cost of production interpretation of Cantillon.

The evident difficulty with Cantillon’s account of intrinsic values is the well-known circularity pertaining to all cost-of-production theories of prices: in general, costs of production cannot be known independently of prices. On the other hand, no such logical difficulty arises from treating wage-rates as data. . . . It is also evident that at many points in the *Essai* that Cantillon treats a real wage as given by a customary mode of living. . . . Thus Cantillon treats a normal real wage and wage relativities as determined independently of prices and outputs. Wages are assumed given both in the analysis of production and allocation and in the analysis of income distribution and prices.

To return to our consideration of Brewer's verdict on Cantillon's theory of value. Brewer (Bowley also) has evidently missed the essential point that the price structure in Cantillon's world reflects the social order, in accordance with which distribution of output is determined. Brewer's mistakenly negative view is therefore unsurprising. Brewer concludes (1992: 70):

Cantillon's idea was to explain money prices by real, permanent factors (land and labour), and express these in terms of land alone. Heterogeneity of land evidently poses a serious problem for a land theory of value. He seems not to have had any satisfactory solution to the problem.

That reading of the *Essai* is, we believe, well wide of the mark.

It is time to consider - more closely than Bowley and Brewer seem to have done - what Cantillon actually did say as regards intrinsic value. On careful examination of the text, it becomes clear that when Cantillon refers in *general terms* to the quantity and quality of the basic inputs of land and labour he does not imply that these resources are being spoken of in precise quantitative terms, as exact physical quantities of land and labour; rather he is indicating the nature of what he means by "intrinsic value", as corresponding, in some sense, to the resources which have gone into the making of the commodities in question. Only, when we come to specific instances, does it become necessary to be more precise - and in these instances when he wishes to quantify resource inputs Cantillon does so in terms of money value - in terms of what the entrepreneur has to pay for them. That is the case with respect both to land and to labour. Let us take what may be the less contentious instance first, that is, labour.

Note how Cantillon deals with heterogeneous labour. Perhaps Cantillon's most generally known (*via* Adam Smith) theoretical contribution is his explanation of wage differentials, in terms of the various costs incurred in bringing up a worker to different trades and bearing the risks and dangers involved. It is necessary that these costs be in time made up for by correspondingly higher remuneration. Cantillon famously observed:

[If a father puts his son] to a Trade he loses his Assistance during the Time of his Apprenticeship and is necessitated to cloath him and pay the expenses of his Apprenticeship for some years. The Son is thus an expense to his Father and his Labour brings in no advantage till the end of some years. The [working] Life of a Man is estimated but at 10 or 12 years, and as several are lost in learning a Trade most of which in England require 7 years of Apprenticeship. A Husbandman would never be willing to have a Trade taught to his Son if the Mechanics did not earn more than the Husbandmen. (*Essai*: I, vii, 2)

The Arts and Crafts which are accompanied by risks and dangers like those of Founders, Mariners, Silver miners, etc. ought to be paid in proportion to the risks. (*Essai*: I.viii.4)

Thus workers of different qualities are differently rewarded and, in proportion to these differences in wages, intrinsic values of the products in whose manufacture these various sorts of labour are involved are correspondingly different. Thus heterogeneous labour, with

account taken both of quantity and quality, is made commensurate via money wage differentials in calculating the labour contribution to the intrinsic value of a commodity.

With respect to intrinsic value, it is evident that the primary consideration is what the entrepreneur has to pay for the resource. Intrinsic value reflects the “quantity and quality of labour” required in production as measured by summing up the differing wage costs the employer has to pay for workers of different capabilities. Cantillon gives an example. Comparing two suits of clothes, one of fine and one of coarse cloth, each made from the same quantity and quality of wool, he attributes the higher value of the fine suit to “more work and dearer workmanship” (*Essai*: I.x.15). That suit is more expensive, not simply because it involves more work, but is the product also of better-paid work. To repeat: costs, and so intrinsic values, are proportionate to the “quantity and quality” – by money values - of the labour employed.

Water on the streets of Paris, because water from the Seine is free, costs only the wage of the water-carrier:

The price of a pitcher of Seine water is nothing, because there is an immense supply which does not dry up; but in the streets of Paris, people give a sol for it – the price or measure of the labour of the water-carrier. (*Essai*: I.x.6)

Note that the intrinsic value of the labour of the water-carrier is expressed by Cantillon in terms of the money paid, not as a quantity of labour in real terms.

As regards heterogeneous land we understand Cantillon to follow exactly the same procedure as he did with heterogeneous labour. That is to say, he makes land of different types commensurate with other inputs in terms of money costs as represented by the rent which has to be paid. The “quantity” of pieces of heterogeneous land is interpreted - where precision is required - as the sum total of rents demanded for the lands in question. Heterogeneity of land in fact poses no problem in theory or in practice. From the theoretical point of view different sorts of land are readily quantified in terms of the rent costs; from the practical point of view we note that the farmer never has any need to make commensurate in real (physical) terms the land of different sorts or qualities that he may rent – all that matters to him is the rent in money per acre of these various types of land.

Illustrations indicate clearly that when it comes to specific cases Cantillon takes land as counting towards intrinsic value by its cost (rent) to the entrepreneur – not by whatever area the land might be.

Thus for instance: Cantillon (*Essai*: I.x.5) makes the point that the price of standing timber is “fixed by the matter or produce of the land, according to its goodness”. That is to say, the woodcutter has to pay for the right to fell the trees and what he pays reflects the value of the timber on the market. The rent paid by the woodcutter, which must be covered by the price at which he sells the cut timber, corresponds to the net value of the product, not to the area (the physical quantity) of the land – of whatever character it might be - on which the trees are grown.

Cantillon also makes reference to mining. “The real or intrinsic value of metals is like everything else proportional to the land and labour that enters into their production”. (*Essai*: I.xvii.2) The (direct) land element in the value of the metal is “considerable only so far as the owner of the mine can obtain a profit from the work of the miners”. In other words, only if a mine is sufficiently productive to yield surplus value over the cost of working it, does the owner get a rent. As in the examples above, it is not the physical quantity of the resources (the amount of land rented to the miners), but the land’s revenue-producing capacity that determines the rent extracted by the landowner. If the right to prospect for, say, coal is sold by a landowner, parcels of land of the same quantity (in acres) would be let at higher or lower prices according to the expected yield from working a mine.

Initially, in introducing the concept of intrinsic values, Cantillon referred to such values in real terms – as corresponding to quantities and qualities of land and labour inputs. Similarly, in specifying the “Par” as the land equivalent of a bundle of wage-goods he refers to a physical quantity of land by acres. Nevertheless he recognises that to attempt generally to measure intrinsic values in real terms would not merely be complicated in practical terms, often quite impossible. Intrinsic values quoted in terms of all sorts of different quantities and qualities of land and labour would be incommensurate and quite useless for use for the conduct of trade. He makes the point:

. . . Men have been forced of necessity to employ a common measure to find in their dealings the proportion and the value of the Products and Merchandise they wished to exchange. The only question is what product or Merchandise would be most suitable for this common measure, and whether it has not been Necessity rather than Fancy which has given this preference to Gold, Silver or Copper which are generally in use today for this purpose. (*Essai*: I.xvii.15)

In fact he goes on to admit that even to express and compare under different circumstances the relatively simple matter of the value of the Par in real terms as corresponding to quantities of land may be problematical. Thus:

The Money or Coin which finds the proportion of values is the most certain measure for judging of the Par between Land and labour and the relation of one to the other in different Countries where this Par varies according to the greater or less produce of the land allotted to those who labour. (*Essai*: I.xi.18)

If, for example, one man earn an ounce of silver every day by his work, and another in the same place earn only half an ounce, one can conclude that the first has as much again of the produce of the Land to dispose of as the second. (*Essai*: I.xi.19)

In other words, in normal day-to-day situations it is easier and more practicable, as well as more accurate, to express relative values – intrinsic values in real terms – in terms of money. The real intrinsic values corresponding to specific quantities and qualities of heterogeneous resources of course underlie these monetary prices. Once the real purchasing power of money (silver) has been established in a money-using economy, rental

and wage costs (and deriving from these, commodity prices) are quoted in terms of money, greatly increasing the information available in the market and facilitating comparison of alternative courses of action. In the normal course of events agents are able to identify and compare the values – say, of wages and rents – without ever having to work out an inventory of “embodied” physical resources – i.e. of the intrinsic values in real (quantitative) terms which determine these relative money values.

At the beginning of Part II of the *Essai* - in which he intends to discuss monetary matters - Cantillon returns to the practical necessity of expressing intrinsic values in monetary rather than real terms. Here he again emphasises the fact that it is absolutely essential that intrinsic values be quoted not in real but in monetary terms, which is the only way in which they can be set against each other (in order - as he puts it – to “fix” in relation to each other, the intrinsic values of all the “different products or merchandises” in the market”).¹¹

In Part I an attempt was made to prove that the real value of everything used by man is proportionate to the quantity of Land used for its production and for the upkeep of those who have fashioned it. In this second part, after summing up the different degree of fertility of the land in several countries and the different kinds of produce it can bring forth with greater abundance according to its intrinsic quality, and assuming the establishment of Towns and other Markets to facilitate the sale of these products, it will be shown by comparing exchanges which may be made, wine for cloth, corn for shoes, hats, etc and by the difficulty which the transport of these different products or merchandises would involve, that it was impossible to fix their intrinsic value, and there was absolute necessity for Man to find a substance easily transportable, not perishable, and having by weight a proportion or value equal to these different products and merchandises, necessary or convenient. Thence arose the choice of Gold and Silver for large business and of Copper for small traffick. (*Essai*: II, I, 1)

Cantillon is evidently saying that, if – as they do - goods are to exchange in terms of their intrinsic values (normal values), as a matter of “absolute necessity”, there must exist some medium in terms of which the intrinsic values of different items (e.g. as Cantillon mentions, wine against cloth) can be expressed and compared. *Intrinsic values have to be made comparable*. If intrinsic values were expressed (even supposing that they could be) as peculiar to each commodity in real terms of such and such a quantity of this, that and the other variety of the multifarious types and qualities of land (or land and labour) which had gone into the production of a commodity, trade – even by a laborious, uncertain and inconsistent system of barter - would scarcely be possible. It is the social invention of money – as the standard of value and medium of exchange - that is the essential facilitator of trade: an essential role of money is that intrinsic values are in practice made commensurate by expressing them in money.

In other words, Cantillon recognises that, in the real world of commerce, intrinsic values are not expressed in terms of quantities and qualities of the real (heterogeneous) resources that are used in production – which would be totally impracticable – but simply in terms of the monetary costs of production of the commodities as traded in the market. Normal, long-run prices actually correspond to intrinsic values – they correspond to the quantity and

quality of “land and labour embodied” measured in terms of money. (That of course would have been Cantillon’s answer had he anticipated Marian Bowley’s question “What is to be done with heterogeneous land in relation to intrinsic value, how is its quality to be assessed?”)

To sum up: we take the view that Cantillon’s explanation of the nature of “intrinsic values” (long-run equilibrium values or “natural” values) was much more sophisticated than commentators seem to have realised. Cantillon did not attempt to explain intrinsic values in terms of crude “quantities of land” and “quantities of labour”, (with labour quantities being reduced to constituent land quantities). He appreciated the impossibility of aggregating in physical terms land of different characteristics to arrive at a quantity of “land in general”. He did not attempt to make heterogeneous pieces of land commensurate in real terms: what he did instead was relate heterogeneous pieces of land in terms of value – what the entrepreneur had to pay to obtain use of the land. What Cantillon was proposing was not a “land-embodied” theory of value but a cost of production theory of value, which explained intrinsic values in term of the expenditures which the producer has made on the essential inputs of land (of all sorts) and labour (either directly, or indirectly).

4. Other interpretations

On checking the interpretations of Cantillon’s theory of value offered by various authorities, the “labour-embodied” reading seems to be in very much of a minority. Notice for instance the account given by Mark Thornton (2010: 5), the editor of the new Thornton-Saucier translation (2010) of the *Essai*.

Cantillon’s conception of cost as the sacrifice of land and labour foregone is far more advanced than the land theory of cost and value advanced by the Physiocrats or the labour theory of cost and value advanced by the classical economists. But Cantillon had a far richer understanding of cost than a simple measure of the land and labour that went into production. Cantillon stressed two important concepts throughout the *Essai* that provide greater depth to his conception of cost. First, Cantillon viewed all resources as heterogeneous. Each piece of land was of a different quality, each labourer was also of a different quality. Therefore, while intrinsic value was a measure of cost, it was not possible in fact to simply count the number of hours and acres except in an abstract way or in simple illustrations. In fact, after establishing a preliminary land-and-labour theory of value in part one, he notes at the very beginning of part two that for specific goods in the real economy, “it is impossible to fix their intrinsic values”.¹²

It is clear that Thornton does not go along with the Bowley-Brewer thesis that Cantillon was prepared to put aside the heterogeneity of land and, in effect, “simply count the number of acres”. What though appears odd is that Thornton seems to leave the matter at that without offering any explanation as to how Cantillon coped with the situation. It is a serious omission from the above account that no mention is made of Cantillon’s strategy of translating “real” intrinsic values into their equivalents of money values based on money wages and money rents. It is probable however that we can take it that Thornton did understand Cantillon to hold that intrinsic values of heterogeneous inputs were normally

expressed in money terms. For one thing he notes that Cantillon clearly appreciated the advantages of a monetary system over one of barter. For another, he cites Hülsmann (2001), whom we quote below, as observing that “intrinsic value is merely being used as a measure of the quantity of land and labour” a *measurement which could only be made “in terms of market prices”*. I guess it is not unreasonable to put two and two together and conclude that Thornton agrees with the contention that Cantillon held that, with heterogeneous land and labour, the intrinsic values of commodities were naturally (necessarily) expressed as money values.

We have found two other commentators who certainly do understand Cantillon to envisage the intrinsic values as being expressed in money terms - as the sum of wages and rents paid out in production – even with heterogeneous resources.

For instance Jörg Guido Hülsmann (2001: 696) adopts a position corresponding to that which we have adopted.

Cantillon’s notion of intrinsic value is not conceptually detached from the market for he defines intrinsic value as a *price*. It is this price, which need not be realised on the market, which measures the quantity of labour and land in a product. Thus [Cantillon] holds that intrinsic value is merely a measure of the quantity of land and labour. [An implication is that] he avoided the grave error of many later economists who claimed that land and labour are the measure of value. . . . There can be no doubt that what [Cantillon] had in mind, in using the phrase “intrinsic value”, was a quantitative evaluation of land and labour and that this evaluation could only be cast in terms of market prices. Cantillon thus anticipated the importance of money prices, emphasizing their unique suitability for economic calculation. He claims that “Silver, or Money, which in exchange finds the proportions of value, is the most certain measure to judge about the par of Land and Labour.”

Hülsmann’s understanding of Cantillon’s treatment of intrinsic value appears to tally with our own. Intrinsic value – derived from the money prices of land and labour inputs – reflects the quantities of (we take it) heterogeneous resources which cannot otherwise (“could only be cast in terms of market prices”) be rendered commensurate.

We fully agree with the succinct statement by Aspromourgos (1989). (Emphasis added)

Cantillon’s treatment of prices takes its bearings from a fundamental distinction between “intrinsic value” and market price. The intrinsic value of anything is “the measure of the quantity of Land and of Labour entering into its production, having regard to the fertility or produce of the Land and to the quality of the Labour.” *Essentially, the intrinsic value of a commodity is the sum of the costs of the various kinds and quantities of labour and raw materials which are employed in its production.* However, market price “will not always follow this proportion” [i.e. market price will not always be equal to intrinsic value].

It is clear that Aspromourgos understands Cantillon to quantify and make commensurate heterogeneous inputs of land and labour by adding up the monetary costs to the employer of all the various inputs employed in production. That is the interpretation of Cantillon for which we are contending. Too many would-be interpreters of Cantillon have missed the fact that Cantillon is quite at home with the idea of intrinsic values being measured and expressed on the market in money terms as “proportionate to” to quantities and qualities of heterogeneous resources (both land and labour) employed in production. Although we have not yet quite completed our review of Cantillon’s conception, we can certainly say that Cantillon’s analysis is perfectly capable of describing the working of a contemporary, pre-industrial economy just on the eve of the establishment of a full-blown capitalist system.

5. A simple model of the Cantillon system of production

5.1. The production system.

Let us use a simple numerical model - a “rational reconstruction”¹³ (adapted from Grieve, 1993) - to illustrate the Cantillon conception. We examine the determination of intrinsic values and the working out of the value of the Par in the context modelled. We will also indicate how intrinsic values depend, *ceteris paribus* on distribution. Initially – but only initially - for manageability we assume that land and labour are both homogeneous; we will eventually drop that assumption and demonstrate the compatibility of Cantillon’s theory with the existence of heterogeneous land.

Suppose that in the country in question there is a given area of cultivable land, of uniform character. There are two social classes – landowners who draw rent and landless workers, mostly employed on the land, who earn a wage (corresponding to the accepted “mode of living”) which reflects their weak bargaining position against the owners. We abstract from wage differentials (both between masters and men and between trades). Profits on capital do not appear as a category of income. Production takes place in two sectors – agriculture and manufacturing, with a specified technology used in each sector.

Two goods are produced: “commodity a” (agricultural produce, not distinguishing between basic foodstuffs, raw materials and luxuries) and “commodity m” (craft manufactures, both necessities and luxuries). Farmers use some of the “a” they produce for their own purposes (seed and food) and sell the rest to the manufacturers (materials, food) and to the landowners (food, luxuries). At the same time farmers buy in some “m” from the manufacturers. Manufacturers use raw materials from the farmers along with some of their own products (wage goods and equipment), and sell output to farmers and landowners. The farming and manufacturing sectors are thus interdependent, using as inputs (materials or wage-goods) their own and each other’s products, grown on the land or worked up from its produce. Both sectors supply goods directly to the proprietors. It is assumed that all incomes are spent, the landowners, unlike others, consuming luxuries as well as means of subsistence.

We suppose that, in all, 360 units of labour (360N) - working families - are employed and 650 units of land are cultivated (650L). As mentioned, labour and land are, merely for initial simplicity, each taken to be homogeneous. The economy is understood to be in a state of equilibrium: supplies are adjusted to demand so that current market prices correspond to

intrinsic values. (In equilibrium, manufacturers' sales receipts just cover costs of materials and labour; as far as the farmers are concerned, material and labour costs are covered with rent charges absorbing all surplus value generated over these costs.

Production functions:

(which, with real wage given, take account both of technology and distribution)

Agriculture: 200N working on 650L use 80a to produce 390a;

Manufacturing: 160N use 160a to produce 140m.

The production system in terms of commodity inputs and outputs

("production of commodities by means of commodities") is as shown below:

The real wage is *given* as $(0.5a + 0.25m)$ per unit of N;

the surplus $(= 50a + 50m)$ goes exclusively to the proprietors as rent.

Agriculture uses	$(100a + 50m) + 80a +$	to produce	390a
Manufacturing uses	$(80a + 40m) + 80a + 50m$	to produce	190m
	Total usage		$340a + 140m$
	Total output		$390a + 190m$
	Surplus		$50a + 50m$

Relative values ("intrinsic values") can be determined from the price-cost equations below.

The condition of equilibrium is that the value of expenditures in production (lhs) is equal to the value of the sales proceeds (rhs).

Agriculture: $100Pa + 50Pm + 80Pa + (50Pa + 50Pm) = 390Pa$

(note: $(50Pa + 50Pm)$ is value of farmers' rent payments)

Manufacturing: $160Pa + 90Pm = 190Pm$.

Equilibrium prices (intrinsic values):

taking Pa as *numeraire* these work out at:

$$\mathbf{Pa = 1, Pm = 1.6, wage = 0.9, rent = 0.2.}$$

5.2. The meaning of intrinsic value

Intrinsic values are made up of the resource costs - which may be measured in real or monetary terms (though measurement in real, physical terms is practicable only with homogeneous land). Initially we are measuring input costs in real terms. These are the costs which have to be met, over all stages of production in agriculture and in manufacturing; additionally, in the case of the farmers, the rents demanded by the proprietors have to be covered by sales receipts.

In the first instance intrinsic values can be represented as the costs incurred for the use of labour *and* land; thereafter, the analysis can be taken to its logical conclusion with labour costs translated into the cost of the land from which the means of subsistence of labour have been drawn. Recall that Cantillon regards land as especially significant as a country's

principal resource. Thus total land costs include land both directly and indirectly (providing the means of subsistence of labour) used in production. (Compare Sraffa's 1960 procedure of reducing commodity costs to the value of "dated labour inputs". Here we are dealing with both dated land and dated labour inputs.)

Procedure:

Firstly we calculate separately the labour and land inputs (physical quantities) required in the production of commodities "a" and "m".

The resources used in the production of each commodity can be calculated by adding up the usage of land, labour and materials at each stage of production (in periods t , $t-1$, $t-2$ etc). For each period of production (say period t) land and labour inputs can be identified as representing that period's current use of land and labour, together with current expenditure on material resources, which had been produced in the previous period ($t-1$). These latter material inputs of period t (which had been inherited from the production of period, $t-1$) can then be treated in the same way, being divided into labour and land costs incurred in that period ($t-1$) together with the cost of materials inherited from the previous period - ($t-2$)'s production.

The cost of production of a finished commodity can thus be reduced, step by step, back through the stages of the production process, to payments made to labour and to the landowners; eventually leaving only a negligible material residual. Intrinsic values are, as we have said, made up of the costs (in real or monetary terms) of acquiring the inputs required for production.

Intrinsic value of commodity "a":

Consider the production of $390a_t$ in period t . ($390a_t$) Inputs (implying costs) are as shown below (subscripts denote the date of production of material inputs and date of use of labour and of land). It may be apparent to readers that we are here following Sraffa's (1960) procedure of reducing material inputs to constituent "dated labour terms". (Here in fact we are reducing material inputs to "dated-land" as well as dated-labour components.)

$390a_t$ are produced by $80a_{t-1} + 200N_t + 650L_t$ (inputs in period t)

Correspondingly,

$80a_{t-1}$, the material input in period t , had itself required material, labour and land inputs when produced in $t-1$; thus:

$80a_{t-1}$ are produced by $80/390 (80a + 200N + 650L)$
 $= 16.41a_{t-2} + 41.03N_{t-1} + 133.33L_{t-1}$ (inputs in period $t-1$).

Identifying inputs of "a" at progressively earlier periods, we find

$16.41a_{t-2} = 3.36a_{t-3} + 8.41N_{t-2} + 27.33L_{t-2}$ (inputs in period-2)

And so on . . . As inputs are traced further back in time, the quantity of material input becomes negligibly small as direct material inputs are “reduced” to the constituent inputs of land and labour used in their production. Eventually, we trace the total of current and past inputs of labour and land utilised in the production of 390a, completed in period t; thus:

Labour (N)	Land (L)	
200.00 _t	650.00 _t	
41.03 _{t-1}	133.33 _{t-1}	
8.41 _{t-2}	27.33 _{t-2}	
1.72 _{t-3}	5.60 _{t-3}
0.35 _{t-4}	1.13 _{t-4}	
.	
251.6	817.7	

It is thus revealed that production of 390a requires, with the technology in use, 200 current labour plus 51.6 past labour; land requirements are 650 current use together with 167.7 past usage. Total usage of real resources amounts therefore to:

251.6 labour along with 817.7 land.

Correspondingly, one unit of “a” requires for its production 0.643 labour (past and present) along with 2.097 land (past and present);

i.e. intrinsic value of one unit of “a” = 0.643 labour + 2.097 land.

The intrinsic value of one unit of “a” is arrived at by adding up the costs of these inputs, as determined by the current wage and profit rates which correspond to the proportions in which the available output is divided between proprietors and workers. (Note: if distribution were different, and wage and rents correspondingly different, relative intrinsic values would also be different. (See below: section 15.5.5.)

The intrinsic value of commodity “m” can be calculated in the same way.

190m are produced by 160 labour + 80a + 90m
 = 80a + 40m + 80a + 50m
 Taking one “a” to require 0.643 labour + 2.097 land,
 190m require: 211.6 labour + 167.8 land + 50m
 50m require 50/190 (211.6 labour + 167.8 land + 50m)
 = 55.7 labour + 43.3 land + 13.2m
 13.2m require 14.64 labour + 11.23 land + 3.46;
 and so on . . .

Thus, one unit of “m” requires for its production
 1.51 labour (past and present) together with 1.2 land (past and present)

i.e. intrinsic value of one unit of “m” = 1.51 labour + 1.2 land.

We may translate these values in terms of “a” into money values:
 Assume, with given monetary conditions, prices (“intrinsic values”) in terms of money happen to be: **Pa = £50; Pm = £80; wage = £45 and Rent = £10.**

Confirmation: Note that these money values correspond to the money costs of the total land and labour inputs which make up, in real terms, the intrinsic values of “a” and “m”.

A single unit of “a” “embodies” $0.643N + 2.097L$
 costing (at going rates) $£29.03 + £20.97 = £50$.

A single unit of “m” “embodies” $1.51N + 1.2L$
 costing (at going rates) $£68 + £12 = £80$.

National income:

Gross output = $390a + 140m = £19,500 + £11,200 = £30,700$;
 net output (available for consumption after replacement of materials)
 = $230a + 140m = £11,500 + £11,200 = £22,700$.

Surplus (value of output over all costs including wage bill) = $£6,500$

Total rent = $£6500$: $£2500$ is paid directly back by farmers to proprietors from sales made to them. Manufacturers contribute $£4000$ to rent, which is passed on via farmers to proprietors. Manufacturers have $£4000$ from sales to proprietors which covers their net deficit with farmers, giving farmers $£4000$ to cover rent charges. What the proprietors spend on goods “a” and “m” comes back to them, directly or indirectly, in the form of rent.

We take the above values, $P_a = £50$ and $P_m = £80$ to be the respective *intrinsic values* of commodities “a” and “m”. These values correspond, at the going rate of real wages, to the total rent and wage payments made (in money) over time, for the use of land and labour in the production of each commodity. That meaning of intrinsic value – values which are implicit in the model - we need to demonstrate.

5.3. The “Par”

Cantillon’s Par indicates how much land (under given conditions of productivity and distribution) must be allocated to the support of labour. Different values of the Par imply, *ceteris paribus*, different wage and rental rates and consequently, different intrinsic values of produced commodities.

From our estimations of intrinsic values (i.e. of the land and labour inputs required for the production of the wage bundle) we can calculate the value of the Par under the conditions assumed. (We revert to quoting values in terms of “a” as numeraire.)

Real wage = $0.5a + 0.25m$ per unit of labour.

Using intrinsic values,

translate above commodity requirement into land and labour requirements:

$(a = 0.643 \text{ labour} + 2.097 \text{ land})$

$0.5a = 0.322 \text{ labour} + 1.049 \text{ land}$

$(m = 1.513 \text{ labour} + 1.218 \text{ land})$

$0.25m = 0.378 \text{ labour} + 0.305 \text{ land}$

 $0.5a + 0.25m = 0.700 \text{ labour} + 1.354 \text{ land}$

Labour and land requirements: for given wage per unit labour = $0.70 \text{ labour} + 1.35 \text{ land}$;
i.e. quantity of land needed to support 1 labour = 1.35 = “the Par”.

Thus land required – over time – to support whole labour force ($360N \times 1.35$)
= 486 (of 650) land.

But the value of the Par tells us not only that so much land, *over time*, period by period, has been used to produce the output of wage goods (of period t-1) which is presently (period t) available for consumption; it tells us also (assuming production unchanging over time) how much land is *currently* devoted to the production of wage goods. In the present period (period t) production is being carried on which will only come to fruition at subsequent dates: some current production will become available in t+1, some in t+2, and so on. In other words, the various production activities which are currently being carried on and will contribute to the output of finished wage goods at future dates mirror exactly the pattern of past production activities which have contributed to the most recent output of finished wage goods (that of period t-1). That is to say, the pattern of past production matches the pattern of current production, with the quantities of land and labour used at periods in the past corresponding to quantities of land and labour presently engaged in production activities which will be completed only over a number of periods into the future.

When therefore we find that the value of the Par indicates that 486 land went, over time into the production of the output of period t-1, we can conclude that in the current period labour working on 486 land is engaged in producing, at various stages in advance of the work's ultimate date of completion, wage goods for the support of labour in the future.

We deduce therefore that, presently, 486/650 - in other words, approximately 75% of the (homogeneous) land - is currently given over to support of the workforce. That is the significance of Cantillon's Par. It is an indicator of the cost to the landowners of supplying - at the going standard of living - the means of support of the working population. As Cantillon puts it, the real "expense" to the landowners of the "wage-bill" is the output they forego since the produce of a proportion of their land has to be made available to the workers. In this instance, with the specified real wage corresponding to 1.35 units of land per worker, i.e. 486 (of 650) land must be allocated to providing subsistence for the whole workforce of 360 labour. The value of the Par reflects, *ceteris paribus*, the balance of economic power between landowners and those who do not own, but work the land; the conventions of a particular time and place also come into the reckoning.

5.4. Heterogeneous land

We must emphasise that we interpret this theory which we attribute to Cantillon *not* as a "land embodied" theory of value, but understand it to be something quite different - a "cost of resources" theory of value. A cost of land theory, by focusing on the monetary cost of hiring land, rather than on the physical quantity of land, is not constrained in its applicability to the case of homogeneous land in which there is a unique relationship between the cost of land and an unambiguous physical quantity of land. We demonstrate below that the cost of land (and labour) approach holds good in the general case of heterogeneous land where a land embodied theory cannot be applied.

Given that Bowley and Brewer hold that an assumption of homogeneity of land was, or would have to be made, in order to rationalise Cantillon's supposed "land-embodied" theory

of value, let us now drop the land homogeneity assumption from our model and see where that leaves us.

Let us refer to the model with homogeneous land and labour which we have been working as “System One”. Homogeneity may seem a somewhat questionable assumption to have made given that we are seeking to demonstrate the general applicability of Cantillon’s analysis to a world of heterogeneous, not merely homogeneous, resources. But that assumption was necessary to set up the model. We now introduce “System Two” which is in all respects identical to System One, *except that land is now taken to be heterogeneous*.

System Two is represented as happening to produce the same combination of goods as in System One. System Two is also in equilibrium. What we wish to show is that, even in this example with several varieties of land in use relative prices can be determined and correspond to the Cantillon thesis that “the price, or intrinsic value of a thing, is the measurement of the quantity of land and labour entering into its production, having regard to the fertility or productivity of the land, and to the quality of the labour”.

Compare the agricultural sectors in our two systems. In System One the situation in agriculture was that 200 units of standard labour working on 650 standard land produced per annum 390 units of commodity “a”. The situation in System Two is that we again have 200 standard labour but now working on 500 acres of land and producing 390 “a”, *but land is now understood to be heterogeneous*. We suppose that there are available for use in production four types of land: α , β , γ and δ , all with their own particular characteristics.

These 500 acres of heterogeneous land are assumed to comprise equal areas of all four types of land – i.e. 125 acres each of land of types α , β , γ and δ . Although there is the same physical area available of all types of land, these different types are of differing economic significance, as indicated by the different rents they earn. So, with 500 acres of lands with different properties, we here encounter the Bowley-Brewer problem: equilibrium values are to be explained by reference to physical quantities of land inputs, and if we cannot measure in *relevant* real terms, independently of prices, the quantities of heterogeneous land that are available for use in this system, it will not be possible to identify land-embodied equilibrium values. While we cannot derive commodity prices from physical quantities of heterogeneous land, the opposite applies: we can derive land quantities (by value) from commodity values.

In other words, with reference to a realistically complex economy, unless the values of rents paid for the different types of land are already known, no agent possesses all the information to describe meaningfully in real terms the quantities of land which constitute the intrinsic values of commodities as traded on the market. But the point we make here is that - contrary to the Bowley-Brewer critique – to order to make Cantillon’s (supposed) theory of value applicable, we do not *need* to be able to measure and quantify, in real terms, independently of prices, the distinguishing characteristics of the heterogeneous land employed. The incommensurability of physical quantities of heterogeneous inputs is actually beside the point. If wages and rents are given, *as they are in the Cantillon model*, the Bowley-Brewer valuation problem disappears.

Let us see what – from a Cantillon perspective - we make of this situation. Consider System Two. Again, as in the case of System One, we suppose that the real wage is conventionally fixed (in fact with the same real and monetary value as in System One). In System One there was only one type of land and one rent to be determined. While the quantities of heterogeneous land of System Two can be measured in acres, these quantities do not represent the economic significance of the different types of land: that depends on the quality of the land. Although we now have these four types of land; the situation is essentially as before. We do not need to worry about the “economically significant” quantities of these different types of land. What we do know is the value of real wages (the same across the farming sector) and as we also know the output of each type of land, what is left for rent is also determined. To repeat, in this system with heterogeneous land, the key values - wages and those of the four levels of rent are all known, meaning that a determinate set of equilibrium values can be found.

In System Two (as we have already described it) we represent the agricultural sector as being made up of four sub-sectors – each characterised by the cultivation of one type of land. Each of these farming sub-sectors interacts with the manufacturing sector. Together with the manufacturing sector these four sub-sectors produce collectively the same quantities of outputs, commodities ‘a’ and ‘m’, as with the unified agricultural sector of System One, i.e. the total quantities produced in System Two by each sector are 390a and 140m.

Thus we have (production functions):

Agriculture:

sub-sector α : 50 std labour using 20a and 12.5m on 125 land α produce 160a
 sub-sector β : 50 std labour using 20a and 12.5m on 125 land β produce 150a
 sub-sector γ : 50 std labour using 20a and 12.5m on 125 land γ produce 94a
 sub-sector δ : 50 std labour using 20a and 12.5m on 125 land δ produce 86a

 200 standard labour using 80a and 50m on mixed types of land produce 490a

Manufacturing: 160 standard labour using 80a + 50m produce 190m

Suppose, (as in System One) the real wage = $0.5a + 0.25m$ per unit of labour; total rents = $150a + 50m$; divided in proportion to land productivity are:

rent land α = $48.9a + 16.3m$
 rent land β = $45.9a + 15.3m$
 rent land γ = $28.8a + 9.6m$
 rent land δ = $26.4a + 8.8m$

Given wages and rents, commodity prices can be calculated:

(Note: for simplicity we have assumed that wage and material costs are the same on all types of land – the results are different only according to the nature of the land.)

To find relative values, we use the price-cost equations below, which take into account technology and distribution, both exogenously given.

Sub-sector α : $25P_a + 12.5P_m + 20P_a + 12.5P_m + 48.9P_a + 16.3P_m = 160P_a$
 Putting $P_a = 1$, P_m comes out as 1.6
 Sub-sector β : $25P_a + 12.5P_m + 20P_a + 12.5P_m + 45.9P_a + 15.3P_m = 150P_a$
 Putting $P_a = 1$, P_m comes out as 1.6
 Sub-sector γ : $25P_a + 12.5P_m + 20P_a + 12.5P_m + 28.8P_a + 9.6P_m = 94P_a$
 Putting $P_a = 1$, P_m comes out as 1.6
 Sub-sector δ : $25P_a + 12.5P_m + 20P_a + 12.5P_m + 26.4P_a + 8.8P_m = 86P_a$
 Putting $P_a = 1$, P_m comes out as 1.6

Translating prices into money values:

with wage = £45, we have $P_a = £50$ and $P_m = £80$.

Thus: for the agricultural sector as a whole, costs and revenues are:

costs = labour (£9,000) + rents (£11,500) + material inputs (£8,000)

= £24,500;

revenues (sales receipts) = £24,500.

With respect to each type of land the situation as regards farmers' costs is as shown below. The higher rents on the more productive land are of course paid for by the higher surplus over costs.

Land type	wage costs	material costs	rent charges	total costs	output	value of output	rent per "acre"
type α	£2,250	£2,000	£3,750	£8,000	160a	£8,000	£30.00
type β	£2,250	£2,000	£3,250	£7,500	150a	£7,500	£26.00
type γ	£2,250	£2,000	£450	£4,700	94a	£4,700	£3.60
type δ	£2,250	£2,000	£50	£4,300	86a	£4,300	£0.77

	£9,000	£8,000	£7,500	£24,500	490a	£24,500	

With wage and rent charges – given, as determined by productivity and social relations - relative commodity values, equal to “intrinsic values” as made up of wage and rent payments incurred for the services of heterogeneous inputs of land and labour, are implicit. It is indeed fair to say of this system that “the price, or intrinsic value of a thing, is the measurement of the quantity of land entering into its production, having regard to the fertility or productivity of the land, and to the quality of the labour”.

Furthermore, the economic value of each type of land (quantity of land *by value*) can be calculated *ex post* from the particular rents paid on each. (In the 18th century that would normally be done in terms of so many “years’ purchase”).

In the situation envisaged by Cantillon, no one needs to identify intrinsic values in real terms so as to take account of quality as well as quantity of heterogeneous land. The notorious difficulty of the incommensurability in real terms of pieces of land of different types is actually a red herring. To return to the question posed at the beginning of this section – where does the introduction of heterogeneous land get us? – the answer is that it makes no difference. Cantillon had the matter covered: as regards the validity of his theory

– with respect to an economic system of the nature he had in mind - whether land is homogeneous or heterogeneous is beside the point. It is the money values of inputs of heterogeneous land and labour that matter.

5.5. Going further

By borrowing Sraffa's insight about the relationship between distribution and relative values from his *Production of Commodities* (1960) we can take the analysis of relative values a little further - further indeed than Cantillon himself took it. The point can be made that in the case of a surplus-producing economic system such as modelled in our Cantillon-type illustration, even with a given endowment of land and labour and a given technology, the set of (intrinsic) values consistent with equilibrium is not unique. The particular set of values established depends on how the output available for distribution is actually divided between the competing claimants. If different divisions of the surplus between proprietors and workers are (at least conceivably) possible, intrinsic values can be determined only when the distributional situation is known. The reason of course is that the payments made for the services of labour and land which make up the intrinsic values of commodities vary according to the distribution of output between proprietors and labour.

Thus, by contrast with the Walrasian perspective, relative values do not appear simply as indices of scarcity. *Ceteris paribus* – even given the same resources and technology – wage and rental rates and relative commodity values are not uniquely determined: they depend further on how surplus output is divided between the competing claimants. Let us, using our simple Cantillon-type model (with homogeneous land and labour), examine the implications of alternative divisions of the surplus.

Our supposition initially was that the wage share of the total available output ($230a + 140m$) amounted to ($180a + 90m$) and the rent share to ($50a + 50m$). The real wage per unit of labour consisted of ($0.5a + 0.25m$) per unit of labour with rent at ($0.077a + 0.077m$) per unit of land. The value of "m" relative to "a" with that particular division of the surplus, was ($1.78/1.11$), i.e. ($1.6/1.00$).

Now let us observe how relative values would be affected were the surplus, *ceteris paribus*, differently divided between land and labour. (Even if this is only a "thought experiment" rather than a real possibility, *the exercise reveals that relative values depend upon how output happens to be distributed.*) We take it that the value of the real wage - whatever value obtains - is exogenously given reflecting current social conditions.

Now suppose that social circumstances are different with the proprietors being able to retain for their own use a greater proportion of the output of their lands. In other words the Par takes a different (smaller) value. (Again for simplicity, we suppose homogeneity of land.) We take production conditions to be as previously supposed, with the same quantities of labour and land producing the same total output, of $390a$ and $190m$. But while technology is the same as before, distribution is different. With the real wage per worker lower at ($0.25a + 0.25m$) per annum, total usage of land and labour as required for the support of one worker is now (0.539 labour + 0.830) land. As compared with the previous scenario the value of the Par has fallen to 0.83 land per unit of labour supported. The

proprietors enjoy to a greater extent free disposal of their estates. Total rent appropriated by the proprietors has gone up to $(0.35a + 0.22m)$ per unit of land.

The structure of intrinsic values is now different. With P_a as *numeraire*, $P_a = 1$, $P_m = 1.2$, $w = 0.55$ (per unit of labour) and rent (on 650 land) = 0.61 per unit of land. Alternatively, in money values, with P_a (as before) = £50, P_m now = £60, wage = £27.5 and rent = £.30.5. It is evident from the altered pattern of prices that equilibrium relative values do not depend simply on demand and supply but reflect also the underlying factors of social and economic power upon which the distribution of income depends. (Recall that, as regards the economies we have depicted with different institutions and different distributions of output, the pattern of production is understood to be exactly the same in each – but output is divided in different proportions between land and labour.) In these models relative values correspond to the costs of production (rents and wages) which entrepreneurs pay for inputs of land and labour.

6. Conclusion

We arrive at the conclusion that, although some critics have questioned Cantillon's theory of value, his analysis of that issue is innocent of the charge made against it, and is as deserving of praise as are other more celebrated elements of the *Essai*.

Cantillon's analytical achievement in the *Essai* is outstanding. He presents a clear and coherent picture the working of a surplus-producing economic system which is of an essentially agricultural character, operating at a time before capitalists' profits had been properly distinguished as a separate category of income. In these circumstances national income understood as divided between the proprietors of land and the landless majority who labour on the land or work up its produce. Distribution depends on the relative economic power of the parties concerned. Equilibrium relative values ("intrinsic values") are established through the working of a competitive market system, operating in a particular institutional context. These intrinsic values correspond to costs of production and reflect both current technology - the required usage of land and labour in production – and the division of the available output – the share captured by the proprietors and the remuneration left for the workers.

We do not go along with the interpretation that Cantillon attempted to explain equilibrium values ("intrinsic values") of produced commodities by reference to physical quantities of land and labour employed in these products. He certainly regarded land and labour (with the latter reducible to the land required to provide the sustenance of labour) as the sources of real wealth. However he appreciated that it was generally not possible to make commensurate in real, physical terms pieces of heterogeneous land, and consequently chose to connect land inputs with commodity values, not directly via physical quantities of inputs, *but indirectly, via the hire charges paid (rents) by entrepreneurs for access to land*. Thus, in Cantillon's analysis, intrinsic values emerge as the sum of the costs of production paid for land and labour. From that perspective there is no need for the prior quantification of heterogeneous land in real, physical terms. Cantillon's theory of value may therefore be described as a "cost of production" theory.

That statement must be complemented by recognition of two points. (1) Critics have argued that a cost of production theory of value is untenable in that it involves circularity, in that it implies that “rent governs price” and at the same time “price governs rent”. But that objection does not apply in the case of Cantillon’s theory: given productivity, real incomes – in the form of wages and rents, are determined exogenously to the price system by the prevailing property relations in society. The economic power possessed by the owners of landed property ensures that the workers, lacking that power, have to survive at a mere subsistence level. Prices established reflect the realities of the social order. (2) The particular social order and property relations which exist at any particular time and place are not necessarily universal or eternal. *Ceteris paribus*, differences in the social order would imply in Cantillon’s system the establishment of a different set of equilibrium prices (intrinsic values). The implication of that is that we do not interpret equilibrium prices as – from a Walrasian perspective – “indices of scarcity”; they necessarily correspond not only to what goods and services are available to the community, but reflect social conditions and who has command over the community’s resources.

We believe that Cantillon’s approach to questions of distribution and value is, *mutatis mutandis*, to be preferred on grounds both of logic and of realism to the marginalist or neoclassical approach developed in a later era. In fact we suggest that Cantillon’s treatment of distribution and value – even though set in an eighteenth century world - may be viewed as offering guidance as to how to develop a more generally applicable analysis – along “old” classical lines. Cantillon as a theorist may be regarded as a direct precursor of Adam Smith. Both Cantillon and Smith analyse the working of a surplus-producing economic system in the context of the particular social order in which they lived. Smith however, in comparison with Cantillon, was dealing with a later, industrialised, era and was concerned with an economy in which production is organised by capitalist entrepreneurs whose aim is to make, not a superior wage, but income in the form of profit, estimated as a rate of return on capital invested. Nevertheless Cantillon shares with Smith (and after him Marx) the understanding that the working of an economy cannot be explained without recognition of the socio-economic conditions which determine the relative economic power possessed by different classes within society.

Notes

1. F. A. Hayek (1991: 260) remarking on the strange history of Cantillon’s *Essai*, comments that “[h]ere was a work that had exerted the very greatest influence on the initial stages of a science and that had given the first coherent survey of this new science, only to disappear completely from view for nearly a century, so that its purely accidental rediscovery was in the nature of a revelation.”

2. Richard Cantillon was born in Ireland in County Kerry (date uncertain, usually reported as 1680) of a Catholic land-owning family which was dispossessed in the “glorious revolution” of 1688. Having moved to France early in the next century he took French citizenship. Became, via a family connection, involved in banking in Paris and other financial centres, particularly London. “During the late 1710s and early 1720s Cantillon speculated in, and later helped to fund, John Law’s Mississippi Company, from which he acquired great wealth. However, his success came at great cost to his debtors [to whom he had lent money when the market was high] who pursued him with lawsuits, criminal charges, and

even murder plots. . . . In May 1734, his residence in London was burned to the ground and, it is generally supposed, Cantillon died in the fire. While the fire's cause is unclear, the most widely accepted theory is that Cantillon was murdered. Cantillon's biographer, Antoine Murphy (1986), has advanced the alternative theory that Cantillon staged his own death to escape the harassment he was experiencing . . . re-appearing in Surinam under the name the Chevalier de Louvigny." (From *Wikipedia* article "Richard Cantillon"; accessed 27 April 2015.)

3. While in Book II of the *Essai* Cantillon comes very close to recognising profit on investment as a separate category of income, in his general model of the system, as presented in Book I, profits in that sense do not appear; income receipts are there treated as going either to rents or wages, with it being supposed that master farmers or master craftsmen receive about one and a half times the wage of an ordinary labourer. Aspromourgos (1989) remarks of Cantillon's *Essai* that "in a sense it stands between pre-capitalist and capitalist society, in some respect straddling both", and quotes Marx's observation that "Petty, Cantillon and in general those writers who are closer to feudal times assume ground rent to be the normal form of surplus value in general, whereas profit to them is still amorphously combined with wages" (Marx, 1967, Vol, III: 783-784). See also Prendergast (1991).

4. It may be noted that it was in fact "by conquest" that Cantillon's Norman ancestors came into possession of their Irish lands and by conquest also the family was forced 600 years later (as supporters of the House of Stuart) to surrender much of their property to English incomers.

5. To paraphrase Keynes (1930) [1971], Vol. I: 125: we might say that rents, as a source of income for landowners "are a widow's cruse which remains undepleted however much of them may be devoted to riotous living".

6. Unlike the Classics, Cantillon takes intrinsic values to be constant over time (technological progress not featuring in his account).

7. Note the echo of Sir William Petty's observation (Hull, 1988: 44) that "All things ought to be valued by two natural Denominations, which is Land and Labour".

8. Labour working on such and such an area of land produces a certain output. Cantillon's Par allows an estimate to be made of the total land requirement – including not just the land worked by labour to produce that output, but also the land which has to be worked to provide the support of that labour. The intrinsic value of that output consists of the value of the land and the labour inputs required for its production; that intrinsic value can be re-expressed via the Par in terms solely of land, by translating its labour component into the amount of land required for the support of that labour.

9. Hence the title of Grieve (1992) – "A Course between Scylla and Charybdis".

10. The situation of the "ordinary tenant farmer" in 18th century France is stated by Henri Sée [1927](2004) to have been that land was leased for 3, 6 or 9 years for a fixed sum of money (to which were added some payments in kind and of compulsory labour). The value

of the rent can consequently be regarded as a price-determining cost which had to be covered from the farmer's sales receipts.

11. J. J. Spengler (1954: 407) in his well-known paper on Cantillon observes, as regards Cantillon's analysis of intrinsic value, that "though he apparently felt the lack of a *representative* unit of land into terms of which to convert heterogeneous units of land and similarly the lack of a comparable *representative* unit of labour, he did not attempt to overcome this lack." That observation must be suspect. (1) Cantillon had no problem in rendering heterogeneous labour comparable in monetary terms by using wage differentials, and (2), as we report below, he realised the impracticability of finding a "representative unit of land"; to overcome this lack, he adopted the procedure of employing money values instead of attempting to measure intrinsic values in real terms of quantities of heterogeneous land and labour.

12. The other concept mentioned by Thornton (2007) as "stressed" by Cantillon was that of opportunity cost. "Austrian" commentators are keen to point out Cantillon's grasp of this idea. As his examples show, the application of key resources in one direction precludes their use for any other purpose: land could be used to grow corn for the subsistence of men, or hay for horses. . . . if France wished to import fine lace, then she would have to forego a large amount of wine produced from her vineyards. But, to Cantillon (contrary, I take it, to the Austrian view) costs are more than just opportunity costs: while resources can of course be applied to different uses, costs are made up of the rewards (reflecting social conditions) which have to be paid by the entrepreneur to obtain the services of land and labour.

13. "Rational reconstruction": Aspromourgos (1997: 418) defines "rational reconstruction" as "the application of formal models designed to accurately capture the *intentions* or ideas of an earlier author or text, while going beyond the actual analytical or formal *execution* of the writer". He adds: "[t]his is an interpretive method which may enable a clearer grasp of the logical coherence (or otherwise) and implications of a system".

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