

# **The Classical Circular Economy, Sraffian Ecological Economics and the Capabilities Approach**

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## **Abstract:**

Here I provide some further elaborations on the idea of a classical circular economy and its articulation with the capabilities approach. This enables addressing some important questions raised by Yoann Verger (2017) when commenting on the idea of a classical circular economy as outlined in Martins (2016) while advancing the basis for a Sraffian ecological economics. To understand the connections between Sraffa's economic theory and the classical circular economy discussed by Verger (2017), an essential aspect to be addressed here is Sraffa's interpretation of the classical conception of the wage, which can be fruitfully addressed in terms of the capabilities approach, as suggested by Vivian Walsh (2000).

**Keywords:** Classical circular economy, Sraffian ecological economics, capabilities approach, subsistence wage, strong sustainability.

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## **1. Introduction**

The idea of a classical circular economy advanced in Martins (2016) combines Piero Sraffa's (1960) interpretation of classical political economy with the capabilities approach as originally proposed by Amartya Sen (1980) and Martha Nussbaum (2000), following a line of research subsequently advanced by Vivian Walsh (2000, 2003). In a recent critique of this conception, Yoann Verger (2017), although noticing that the idea of a classical circular economy is essentially based on the writings of Sraffa, Sen and Nussbaum, focuses only on one part of this overall conception, namely, the one pertaining to Sraffa's views on economic theory.

The final outcome of Verger's (2017) comments is thus not so much a discussion of the idea of a classical circular economy, but rather a more specific thing, that is, the advancement of what he calls the basis for a Sraffian ecological economics, focusing only on Sraffa (1960), rather than on the contributions of other authors discussed in Martins (2016), while also criticising some aspects connected to the interpretation of Sraffa (1960) as outlined in Martins (2016).

Here I shall further elaborate on the idea of a classical circular economy and its articulation with the capabilities approach, while providing a reply to Verger's (2017) critique of the use of Sraffa's theory when advancing the idea of a classical circular economy in Martins (2016). To do so, I argue that the more fruitful idea when developing a basis for a Sraffian ecological economics is what Sraffa (1960, p. 10) calls "the more appropriate, if unconventional, interpretation of the wage" that underpins the writings of the early classical political economists. When discussing the usefulness of Sraffa's theory for advancing the idea of a classical circular economy, it is not really possible to leave aside considerations connected to Sraffa's interpretation of the

classical meaning of wages, since this aspect is crucial for understanding the points raised in Martins (2016) that Verger (2017) is criticising.

Sraffa (1960, p. 33) interprets the classical conception of the wage “as consisting of specified necessities determined by physiological or social conditions which are independent of prices or the rate of profits.” As Walsh (2000, 2003) argues when further advancing Sraffa’s revival of classical political economy, a promising strategy for developing classical political economy in the contemporary world consists in interpreting those physiological or social conditions in terms of the idea of basic capabilities advanced by Sen and Nussbaum, as also argued in the context of ecological economics in Martins (2013, 2016).

The discussion of the subsistence wage in terms of basic capabilities also helps to clarify the role that the capabilities approach can play within sustainability economics, a topic which has been much discussed recently (Ballet, Bazin, Dubois, and Mahieu, 2011; Ballet, Koffi and Pelenc, 2013; Birkin and Polesie, 2013; Demals and Hyard, 2014; Martins, 2011, 2013, 2016; Pelenc and Ballet, 2015; Polishchuk and Rauschmayer, 2012; Scerri, 2012), and goes back at least to an earlier perspective on the topic provided by Steve Dodds (1997), which remains relevant for understanding key contemporary problems in ecology and economics (Marglin, 2013). So besides replying to Verger (2017), this is also a good opportunity to provide some further clarifications on what can be the place of the capabilities approach within sustainability economics (Martins, 2013).

Effectively, to focus on Sraffa’s economic theory only, but not on the other dimensions connected to ethical issues such as those discussed within the capability approach developed by Sen and Nussbaum, makes it difficult to address questions such as justice in the management of natural resources in a regime of common property

where exchange value plays no role, which is the regime that Verger (2017) suggests. Therefore, after explaining in which way Sraffa's (1960, p. 10) interpretation of "the more appropriate, if unconventional, interpretation of the wage" that underpins the writings of the early classical political economists can be of help when developing a Sraffian ecological economics, I explain how the capabilities approach can be used in order to interpret the classical idea of a subsistence wage, in order to provide a more complete reply to the issues raised by Verger (2017).

## **2. The classical circular economy**

The idea of a classical circular economy can be presented from many angles. The term *circular economy* is widely used today following the book, *Economics of Natural Resources and the Environment*, by David Pearce and Kerry Turner (1989), who in turn were drawing on previous contributions by Kenneth Boulding (1966), who stressed the need to understand the economy and the environment in terms of a circular process (Pearce and Turner 1989, p. 37). Pearce and Turner (1989, p. 38) also note the contribution of Nicolas Georgescu-Roegen (1971) as another important source of important ideas for the circular conception of the economy.

But the theoretical basis for the idea of a circular economy has been less discussed within the literature. The more consistent basis for any idea of a circular economy cannot be found in the linear conception that characterises neoclassical economics, where economic activity is, as Sraffa (1970, p. 93) argues, "a one-way avenue from 'Factors of Production' to 'Consumption goods'." The more consistent theoretical basis for a circular economy can be found in the conception of the classical political economists which was, according to Sraffa (1960, p. 93), first presented by François Quesnay in a more systematic way.

As Walsh (2000, 2003) notes, the contributions of Sraffa, Sen and Nussbaum can be interpreted as a revival of classical political economy, but focused on different aspects. Sraffa focuses essentially on the analytical aspects of the classical economic theory, and can be fruitfully complemented by the contributions presented by Sen and Nussbaum in their capabilities approach, which focus instead on the moral anthropology of the classical authors – for an extensive discussion, see also Putnam and Walsh (2012) or Martins (2014).

While the contributions of Sraffa, Sen and Nussbaum are particularly useful for understanding how to apply classical political economy to the contemporary world, as Putnam and Walsh (2012) argue, they are not the only way to approach the contributions of the classical authors. The contributions of Sraffa, Sen and Nussbaum, like the contributions of any author, provide only one possible perspective for understanding the classical authors. Also, not all those three authors are equally interested in finding a relationship between their writings and the classical political economists. Sraffa does so very consistently while focusing on various classical authors. Sen also connects his contribution to classical political economy but to a lesser extent and focuses only on Adam Smith, John Stuart Mill and Karl Marx. Nussbaum focuses essentially on Marx, and, more specifically, on the Aristotelian underpinnings of Marx's conception.

More importantly for the present context, Sraffa, Sen and Nussbaum changed their views over time. And depending on the stage of their career we focus on, we find different angles concerning the relation between their contributions and classical political economy. For example, Nussbaum's current views on capabilities are closer to the more objective approach that seems also to underpin Sraffa's perspective, expressed

more clearly at an initial stage of his research, than Sen's (2017) current perspective, for reasons I shall argue below.

When replying to Verger, I focus on the *objectivist* conception that Sraffa adopted at a given stage of his research, where value is understood in terms of the objective physical entities consumed in the production process. In fact, I argue that such a conception remained essential for Sraffa through time. But in order to understand such a objectivist conception of the economy, which Sraffa traces back to William Petty (Martins 2013, 2014, 2016), it becomes crucial to understand the classical idea of a subsistence wage, that Sraffa (1960, p. 33) interprets “as consisting of specified necessities determined by physiological or social conditions which are independent of prices or the rate of profits.”

At an earlier stage (more specifically, at the earlier stages of writing his 1960 book *Production of Commodities by Means of Commodities*), Sraffa's emphasis is on a more objective conception of the determination of wages, defined in terms of physical commodities consumed, to be found in earlier political economists like Petty (Martins, 2016). Indeed, in Sraffa's (1960) book we find a more objective account of wages “as consisting of specified necessities determined by physiological or social conditions which are independent of prices or the rate of profits” (Sraffa, 1960, p. 33). Sraffa (1960, pp. 1-9) adopts in the book this objective conception until page 9, when Sraffa announces that in the rest of the book he will treat the whole wage as a variable, rather than as an objective quantity of commodities.

More importantly, Sraffa (1960, p. 10) writes that this objectivist interpretation of the wage is “the more appropriate, if unconventional, interpretation of the wage”, while noting that although he will use the more usual conception of the wage as a variable throughout the book, the whole book “can be easily adapted to the more

appropriate, if unconventional, interpretation of the wage suggested above.” (Sraffa 1960, p. 10). So interpreting Sraffa’s theory in more objectivist terms, and using such an interpretation in order to make sense of classical political economy as interpreted by Sraffa, is certainly in line with Sraffa’s own views.

More than that, it seems that this interpretation was the one Sraffa (1960, p. 10) found “the more appropriate, if unconventional, interpretation of the wage”. The reason for changing it in the book seems to be the fact that the book is designed to serve as a basis for a critique of marginalist theory. Thus, Sraffa (1960, p. vi) writes in the preface to his book: “It is, however, a peculiar feature of the set of propositions now published that, although they do not enter into any discussion of the marginal theory of value and distribution, they have nevertheless been designed to serve as a basis for a critique of that theory.” In fact, the subtitle of Sraffa’s (1960) book is, quite significantly, “Prelude to a Critique of Economic Theory”. Since Sraffa was trying to provide a critique of the dominant marginalist theory, he presented his theory in a way that would provide the basis for such a critique, rather than thoroughly emphasising the more objectivist conception of Petty.

But while Sraffa’s (1960) book is designed to serve as a basis, or prelude, to a critique of marginalist theory, we can still find traces of the more objective conception that Sraffa was developing in the final version of book, as noted above. And it is important to distinguish the parts of Sraffa’s contribution which are aimed at providing a basis for a critique of marginalist theory, and the parts of Sraffa’s contribution which are aimed at developing a constructive project. The elements of Sraffa’s approach emphasised in Martins (2016) are essentially connected to Sraffa’s interpretation of classical political economy, focusing on the parts which are more helpful for developing a classical circular economy.

This presupposes that Sraffa's (1960) interpretation of classical political economy is a very central element of Sraffa's constructive project, as Sraffa (1960) argues in the preface of his book, and as also argued by Ronald Meek (1961). Indeed, Sraffa (1960, p. v) writes, when clarifying the standpoint adopted in his book: "This standpoint, which is that of the old classical economists from Adam Smith to Ricardo, has been submerged and forgotten since the advent of the 'marginal' method." Sraffa (1960, p. 93) further clarifies, referring to his book, what he sees as the "connection of this work with the theories of the old classical economists" in appendix D (Sraffa, 1960, pp. 93-94).

Sraffa uses his own theory (Sraffa, 1960) in order to interpret classical political economy because he believes that his theory does capture properly the most important aspects of the classical economic theory. More than that, Sraffa (1960) believes that his theory helps unearthing essential features of classical political economy that were submerged after the emergence of the marginalist perspective, and the subsequent reinterpretation of classical political economy in terms of marginalist categories (Martins, 2014). Thus, Sraffa (1960, p. 93) notes that it was only after he developed essential elements of his own theory that his interpretation of David Ricardo's economic theory emerged.

So the use of Sraffa's theory in order to provide an interpretation of classical political economy is part of Sraffa's overall project. And to use it in order to develop the idea of a classical circular economy is not a distortion of Sraffa's own use of his theory. I must add that even if it were, this would not necessarily be a problem, as it could well be the case that Sraffa's theory is useful for interpreting classical political economy even if Sraffa did not believe so. In any case, the interpretation adopted here leads to a conception focused on objective elements, which Sraffa (1960, p. 10) finds the more



appropriate conception, and the one of the early classical economists as he interprets them, a topic to which I now turn.

### **3. Sraffa's interpretation of classical political economy**

The elements of classical political economy which best capture the idea of a classical circular economy were first expressed in a more systematic way by Quesnay. But there were precursors, an important one being Petty, who had an objective approach to wages. According to Petty, wages could be seen in terms of the quantity of land that is necessary to sustain the labourer, which produces the food that nourishes the labourer, for example. So costs could be objectively measured in terms of the quantity of land used in the production process, not only land directly used in the production activity, but also the land to sustain the labourer and to produce the means of production.

In his unpublished writings, Sraffa notes that the more objective approach of Petty to the measurement of costs subsequently gave rise to an emphasis on human labour by Smith, Ricardo and Marx, which was a less objective unit of measurement than land, but still more objective than the subsequent emphasis on more subjective notions such as *abstinence*, a term adopted by Nassau Senior, or *sacrifice*, a term adopted by John Elliot Cairnes (Martins, 2012, p. 151; 2014, pp. 15-17). Mill's interpretation of Ricardo is undertaken using this more subjective approach to the measurement of costs, and after the marginalist revolution undertaken by Carl Menger, Stanley Jevons, Léon Walras and Alfred Marshall, it is not only costs, but value in general that starts to be measured in subjective terms, drawing on the notion of marginal utility.

Here it is important to distinguish whether labour or utility are interpreted as units of measurement of value, or as universal substances that cause value. Sraffa

(1960) shows that under certain circumstances it is possible to reduce value to dated quantities of labour, and when the whole surplus product is given to the labourers, there is a direct proportionality between quantities of labour and prices. This is so because in Sraffa's equations, labour appears as an input for production, but not as a produced output. The reason for this is that humans are not produced as a commodity, and so it depends ultimately on moral, anthropological or political aspects. If there were societies where human beings were produced as a commodity, we would not be able to reduce value to dated quantities of labour. Sraffa (1960) also assumes, following Ricardo, that the worst land pays no rent, and the difference between the productivity of other lands and this worst land generates a rent. Labour can be seen as the cause of value, or universal substance, in a society where humans are not produced as commodities, and appropriate land according to whether it reduces their costs measured in terms of labour. In this case, value reflects power relations in society, manifest in the power to command the labour of others, and appropriate land which generates a rent.

But while the cause of value can be discussed in the sense above drawing on Sraffa's (1960) equations, it is not discussed by Sraffa (1960) at all (Sen, 2003). Sraffa (1960) focuses on the measurement of value at a theoretical level, rather than on the cause of value. And the theoretical unit in which Sraffa (1960) measures value is the Standard commodity, which is a mixed commodity in a Standard system where commodities used as inputs are in the same proportions as the commodities used as outputs. However, it is also important to note that Sraffa is measuring value at a theoretical level, in order to achieve an exact theory, and not at an empirical level.

The use of the Standard commodity enables Sraffa to treat distribution as an exogenous aspect from the point of view of economic theory. For the proportions of commodities in the Standard commodity are identical to the inputs and outputs of the

Standard system, which means that variations in the distribution between wages and the rate of profits can be determined independently of several economic variables such as prices – see Sraffa (1960) for details, and also Bharadwaj (1963) for a discussion.

This provides Sraffa (1960) with a basis for a critique of the dominant economic theory, in which distribution is endogenously determined through marginal productivity curves, a form of determination that Sraffa (1960) shows to be inconsistent, and had important repercussions in the debate with economists like Paul Samuelson or Robert Solow (Martins, 2014), including political implications as noted by Sen (2003). Since distribution is mathematically determined within marginalist theory, there is little room left for discussing ethical or political issues concerning distribution. Distribution is a technical question, not an ethical nor political one.

The exogenous approach to distribution, in which the wage or the rate of profits can be exogenously determined, is part of Sraffa's underlying vision of the economy, together with the more objectivist conception of the old classical political economists (Sraffa, 1960, p. v). And while notions such as the Standard commodity or the Standard system are part of an overall design aimed at criticising marginalist theory, and are indeed subsequent developments of his approach at a given stage when writing his book, as Sraffa (1960, p. vi) highlights, they still contain traces of his underlying vision. The Standard commodity is used as a theoretical unit of measurement, albeit one that presupposes an objectivist vision of the economy.

It is in this objectivist sense that the Standard commodity is suggested in Martins (2016) as a common unit in terms of which biophysical processes can be compared in theory, while at the same time using it as a possible way to achieve efficiency in the production of commodities. This is so because in Sraffa's Standard system, the proportions in which commodities are used as inputs is the same proportions in which

they are used as outputs. If inputs are being produced exactly in the same quantities and proportions as they are used, it is possible to achieve a situation in which no waste is generated in the system, if the total quantity of commodities produced is equal to the total quantity of commodities used, since inputs are being exactly replaced by the outputs produced. This contributes to sustainability, even if it is not a sufficient condition for it to exist.

Sraffa (1960, p. 22) hints at this way of using the Standard system, which consists in the case where the Standard commodity, an auxiliary concept, is “the constituent of the material of the national income and of the means of production”. But in his book, which is aimed at providing a basis for a critique of economic theory, Sraffa (1960, p. 22) takes the Standard commodity merely as “the medium in which wages are estimated.” By measuring wages in terms of the Standard net product, itself constituted by the Standard commodity, Sraffa can then address distribution exogenously, showing the inconsistencies of the marginalist approach where distribution is determined endogenously.

But Sraffa (1960, p. 32) also suggests that “a more tangible measure for prices of commodities” can be obtained which displaces the Standard net product as a medium in which wages are measured. Such a measure is “the quantity of labour that can be purchased by the Standard net product” (Sraffa, 1960, p. 32), that is, the quantity of labour that can be commanded using the Standard net product. This puts the emphasis on power relations in society, and in particular the power to command the labour of others (Martins, 2016, p. 33), which were noted above when discussing the cause of value, a topic Sraffa (1960) does not explicitly address in his book.

Verger (2017) notes, however, that in Sraffa’s (1960) own presentation of the idea of a Standard system, the physical exchanges that support the production of the

system are not represented in the value equations, and so Sraffa's (1960) own system does not provide a complete description of the problem of sustainability. This is correct, and in fact no economic model provides a complete description of the conditions for sustainability, not least because it is not possible to measure with mathematical exactness all the biophysical processes taking place at an empirical level. The point emphasised in Martins (2016) when resorting to the idea of a Standard system and the Standard commodity is the need of achieving no waste in the production of reproducible commodities, that is, reproducing whatever inputs are used in the same proportions and quantities as they are used, which leads to no waste when the total quantities of outputs and inputs are equal.

But this does not mean, and indeed cannot mean, that other aspects connected to sustainability must not be taken into account, such as the exhaustion of natural resources which, as Verger (2017) points out, may be fully depleted during a given production process. Rather, it means that the exhaustion of natural resources has to be considered from another angle, since natural resources are not a reproducible commodity, and so cannot even be included in the Standard system, which contains only reproducible commodities. If we would succeed in transforming the actual system into a Standard system, so as to have balance in proportions, in a self-replacing system where inputs and outputs are in the same proportion and in the same quantities, at best the Standard commodity can be used in order to then infer the natural resources which are being consumed. The problem of natural resources is addressed in Martins (2016) through an emphasis on strong sustainability (rather than through the Standard commodity), noting the need to preserve non-reproducible natural resources, rather replacing them with manufactured capital as presupposed in conceptions connected to the idea of weak sustainability.

In short, the Standard system is used to address the problem of waste, reducing the latter through the use of balanced proportions, while the exhaustion of natural resources, which is another problem, is addressed through the notion of strong sustainability. Verger (2017) notes that the Standard commodity is not aimed at finding a universal substance in which everything else can be measured, but rather as a numeraire which does not explain the exchange values that commodities acquire. But this is connected to the distinction between cause of value and measure of value noted above. In his book, Sraffa (1960) does not focus on a universal substance as the cause of value, but on a unit of measurement, the Standard commodity, as argued in Martins (2016, p. 35), exactly on the page cited by Verger (2017). Sraffa prefers to address the problem of commensurability of commodities through a unit of measurement, rather than through a universal substance. There is no difference with Verger (2017) here, except that in Martins (2016) there is also an attempt to see beyond the specific form in which Sraffa (1960) presented his equations, so as to focus on Sraffa's objectivist vision of the economy, rather than on the basis he provided for a critique of marginalist theory.

The application of Sraffa's ideas for ecological purposes is not, of course, something that Sraffa (1960) has himself done. But I believe that it is clear from what I wrote above that using Sraffa's theory in order to interpret classical political economy (especially its earlier writers or precursors such as Petty or Quesnay) in objectivist terms as a circular economy is certainly in line with what Sraffa saw as a legitimate interpretation of classical political economy. I hasten to add, however, that even if it were inconsistent with Sraffa's own views, it would not necessarily undermine the project, just like (as I shall argue below) Sen's emphasis on more subjective aspects does not undermine the possibility of using his earlier idea of basic capabilities in a more objective way.

A objectivist approach is present even in Verger's (2017) comments, when advocating a Sraffian ecological economics that would involve a double accounting, within a value system on the one hand (concern with the exchange value of commodities), and a physical system on the other hand. This would be a basis for the management of natural resources through a system of common property, which is not explained by Verger (2017), who focuses on Sraffa's economic theory only.

It seems, however, difficult to separate physical aspects from Sraffa's economic system. For whatever moral, anthropological and political aspects are considered when addressing distribution, the share of the surplus thus distributed as wages will be used in certain commodities, thus affecting the proportions of the economic system. So distribution will have an impact on the economic system, which can be conceptualized by explicitly considering labour and wages, as Sraffa (1960, p. 11) does in his third equations, or by simply replacing labour and wages with the commodities consumed as wage goods, as Sraffa (1960) does in his first equations (with no surplus) and second equations (with a surplus). In truth, Sraffa's objectivist approach seems to presuppose that the case where commodities consumed as wages are explicitly represented in the equations is the one he has in mind. But we must distinguish between these various forms of addressing wages, in order to see how distribution, and human choices regarding commodities purchased with wages, both of which are best understood when representing wages explicitly, affect the physical system.

The physical system is, indeed, not very different from what Petty was aiming at in his *Political Arithmetic*, a view which is indeed behind Sraffa's own theory. The question at stake is essentially at the level of the moral, anthropological or political presuppositions at stake, for example whether some natural resources are used for free, while others are appropriated in order to extract a rent, and so on. In contemporary

economies, rents are appropriated due to the property rights attached to land, commodities, and so on. The emphasis on rent when measuring natural resources is highlighted in Martins (2016) only to show how the classical authors possessed a theory of value where the scarcity of natural resources is a specificity that leads to a rent, in contrast with marginalist theory where the presupposition of insatiable subjective preferences leads to a trivialization of scarcity, rather than a focus on the specificity of scarce natural resources.

Verger (2017) suggests instead a system of common property, rather than focusing on rent. This means focusing not so much on the system of property rights that actually exists in capitalism, but rather on a different system, which is a most interesting suggestion. However, this proposal by Verger (2017) remains unelaborated, not least because it involves a further study of how can distribution be undertaken in a regime of common property. Some sort of political consensus must be reached in this regard. This raises important moral and political questions, which are not addressed by Sraffa in his published writings, but have been addressed by various classical political economists.

Central moral and political questions regarding distribution have been revived within the capabilities approach, as Walsh (2000, 2003) argues, which also helps rendering Sraffa's theory applicable in the contemporary world. So I turn now to the capabilities approach, not so much to reply to Verger (2017) now, but essentially to further develop the ideas above, while nevertheless addressing the prospects for a political consensus such as the one required by Verger's (2017) proposal, and also connecting them to recent applications of the capabilities approach within ecological economics.

#### **4. The capabilities approach**



Sraffa's (1960) system, in which distribution is seen as an exogenous variable from the point of view of economic theory, opens the door for an ethical and political discussion on distribution (Sen, 2003; Walsh, 2003; Martins, 2014), one where ecological concerns can be taken into account (Martins, 2016). So it certainly allows for much discussion regarding alternative institutional regimes, such as the one Verger (2017) suggests. But this means that it becomes necessary to find an ethical and political framework for engaging in such a discussion. It is here that the capabilities approach, especially when interpreted in more objective terms, can play an important role (Walsh, 2000, 2003).

Sraffa says very little on the classical idea of a subsistence wage, which enables a certain standard of living according to the classical authors. And in order to render such an idea applicable in the contemporary world, it becomes necessary to further unpack its meaning. Walsh (2000, 2003) suggests doing so by interpreting the standard of living associated with a given subsistence wage in terms of what Sen (1980) and Nussbaum (2000) call the basic capabilities that human beings can achieve, where capabilities are potential functionings, that is, what human beings can be or do.

Sen (1992, p. 109) argues that although the notion of basic needs has been “enormously helpful in drawing attention to deprivations of essential goods and services, and their crucial role in human living”, it is important to focus not on the basic needs for specific commodities, but rather on the potential functionings (i.e., capabilities) that those commodities enable. The commodities that enable us to achieve a given standard of living change through time and space, hence the need to focus on basic capabilities rather than on specific commodities if we want to provide the basis for a conception that can be applied in various historical or geographical contexts.

The very idea of a standard of living, enabled by specified necessities determined by physiological or social conditions (which is behind the classical

conception of wages), depends on the nature of society, which is not the same society that the classical authors studied, and depends on the historical context and the geographical context. Sen (1980) also argues that the notion of basic capabilities provides a better understanding of the very notion of needs, unlike utility or John Rawls's (1971) notion of primary goods (Martins 2007, p. 260). Of course, after taking basic capabilities into account, specific commodities will have to be selected, which can then be included in Sraffa's system. But to focus on basic capabilities when selecting those specific commodities enables the development of a theory that can be applied with a greater level of generality.

However, when trying to accommodate the possibility for a more general consensus on what constitutes a basic capability it becomes necessary to adopt a more general conception of capabilities and freedom, rather than a very substantive one which may not be accepted by everyone. In order to adopt a more general conception of freedom, an essential step is the elaboration of an ontology that enables the discussion of the needs of human beings at various levels of abstraction, from more specific needs which pertain to more specific physiological and social conditions, to more general needs that may be common to various human beings, and possibly universal, both at a physiological and social level (Martins, 2007). The Aristotelian roots of the capabilities approach, which have been developed essentially by Nussbaum (1992) while also taking into account the influence of Aristotle on Marx (Nussbaum, 2000), provide a suitable ontological basis for generalisation by abstracting more general properties.

In fact, the capabilities approach, in which capabilities are defined as potential functionings within an Aristotelian conception of human functionings, is underpinned by an ontology of Aristotelian potentials or causal powers (Martins, 2006; Smith and Seward, 2009) enabled by underlying physiological and social structures, in terms of

which general or possibly universal statements can be made (Martins, 2007). So the prospects for developing a more general approach seem to be quite optimistic once an ontological analysis of physiological and social conditions is undertaken drawing on Sen's (1980) and Nussbaum's (1992) original writings on the topic (Martins, 2006, 2007; Smith and Seward, 2009).

However, ontology is a topic which Sen (2009, p. 41) left severely underdeveloped, by limiting his explicit views on ethics and ontology to the views of G.E. Moore (1903), as Putnam (2004) has also done, thus restricting the use of ontology in ethics to the ascription of reality to moral objects – as Sen (2009, p. 41) writes, “the metaphysics of ‘what ethical objects exist’” – despite recognising that ontology can also be fruitfully used in the study of natural and social structures (Sen, 2009, p. 41; Martins, 2012).

Sen's inability to provide an adequate treatment of ontology, one which would enable generalisation drawing on an ontological analysis of physiological and social structures, has led to other strategies for achieving generalisation, such as an emphasis on freedom in general, rather than on concrete capabilities, which is criticised by Nussbaum (2000, 2003) for being too vague a conception of freedom (Martins, 2006, 2007). Sen's emphasis on freedom in general is also present when addressing environmental problems, for example, when Sen (2013) criticises the Brundtland Report for focusing on the needs, rather than the freedom, of future generations.

According to Nussbaum (2003, p. 417), this change of emphasis leads Sen closer to neoliberal thinkers, while failing to take into account the more substantive problems faced by human beings. Nussbaum (2000) argues for a more substantive specification of human capabilities, and provides a tentative list of capabilities in order to bring greater concreteness into the debate. For this reason, it is more convenient to term Sen's

approach as the *capability* approach (focusing on a vaguer notion of freedom and capability) and Nussbaum's approach the *capabilities* approach (since it focuses on concrete capabilities rather than on the idea of freedom or capability in general).

Nussbaum followed a different strategy from Sen regarding the achievement of a more general consensus. Nussbaum's (1992) earlier views were essentially Aristotelian. But as Nussbaum (2003) herself notes, her views changed in the direction of political liberalism, under the influence of Rawls (1971, 1993, 2001), and so she started to distinguish between the ethical sphere, where we may have a comprehensive ethical or moral conception with very specific views on certain matters, and the political sphere, where there may coexist a plurality of ethical or moral conceptions (Nussbaum 2003, p. 413).

Consensus must be reached at a political level amongst heterogeneous ethical or moral views, but such an overlapping consensus (Rawls, 1993) cannot be itself a comprehensive view, otherwise there would be no space left for heterogeneous comprehensive views. The distinction between an ethical level and a political level enables Nussbaum to maintain her emphasis on more specific or concrete capabilities at an ethical or moral level, within a comprehensive view, while advocating a liberal view at a political level where there may exist an overlapping consensus between different comprehensive (or at any rate more substantive) ethical or moral views. So the discussion of how a consensus can be reached can follow different paths.

## **5. Objectivism and subjectivism in the capability approach**

Nussbaum's political liberalism stands in contrast to Sen's views which are not a political liberalism in line with Rawls's (1993), but rather, Nussbaum (2003, p. 414) argues, a "comprehensive liberalism" in line with John Stuart Mill, within a conception

where liberalism is not only a political position but also an ethical or moral view as well. This is connected to Sen's (1992, p. 109) remark that it is easier to find consensus when focusing on capabilities in general rather than on the specific commodities that satisfy basic needs: Sen is trying to find consensus at an ethical or moral level, while being unable to develop an ontological analysis of physiological and social structures that would provide a more adequate basis for doing so (Martins 2006, 2007, 2011, 2016; Smith and Seward, 2009).

Sen (2009) is critical of Rawls's (1993, 2001) political liberalism, which Sen (2009) interprets as an attempt to reach an ideal social contract based on ideal institutions, rather than an engagement with the real problems faced by human beings (Martins, 2012). In order to find a more general consensus between the various views that various individuals may have, Sen (2009) does not focus on the Rawlsian idea of a social contract, but rather on the possibilities for social choice while taking into account the diversity of human preferences. Sen (2002) does so while trying to find a way of reaching a rational choice at the individual level, and a social choice at the collective level, that allows for a ranking of various options according to human preferences.

To do so, Sen draws upon to his early mathematical studies on social choice theory (Sen 1970), while arguing more recently that the idea of ranking options (according to human preferences) and mathematical measurability are very closely related (Sen (2017, pp. 365-367). Indeed, in his more recent writings Sen (2017, p. 366) goes as far as to argue that "measurement and quantification can be seen as extensions of ranking relations." So Sen (2017) resorts to mathematical measurement of human preferences when trying to achieve a more general consensus, rather than drawing on Rawls's political liberalism as Nussbaum (2003) does. Sen's (1970, 2017) continuous engagement with measurement inspired various contributions on the mathematical

measurement of welfare and poverty, developed, for example, in the Human Development Reports.

Sen's analysis of preference orderings leads to a combination of more objective notions, such as basic capabilities (Sen, 1980; Nussbaum, 2000), and subjective aspects which are inescapably implied in the idea of human preferences. This mixture of subjective and objective elements can also be found in Mill's contribution, which relies on a notion of utility which includes both subjective and objective elements, unlike other approaches where utility and human preferences are seen as irreducibly subjective notions. This mixture of subjective and objective elements underpins the utilitarian philosophy that influenced the subsequent Cambridge economic tradition (or more specifically, the branch of this tradition more concerned with the measurement of human welfare), a tradition which is heavily inspired by Mill, and was founded by authors like Henry Sidgwick, Alfred Marshall and Arthur Cecil Pigou (Martins, 2009, 2014).

Marshall, who was particularly instrumental in establishing the Cambridge economic tradition (Harcourt, 2003; Martins, 2009, 2014), distinguished more objective needs from more subjective wants, while taking both into account when assessing human well-being. The contributions of James Meade and Anthony Atkinson can be seen as a continuation of the branch of the Cambridge economic tradition more concerned with the measurement of human welfare, to which Sen also belongs (Atkinson, 1999; Martins, 2009, 2014). This branch of the Cambridge economic tradition, running from Sidgwick to Sen, relies thus both on objective and subjective aspects when assessing human well-being, in contrast with approaches that adopt a merely subjectivist mental metric.

But a view which takes into account both objective and subjective aspects is less consistent with the classical approach as interpreted by Sraffa (1960), which is an approach where we find no room for subjective elements, within an objective conception that also underpins Sen's (1980) original emphasis on basic capabilities, as Nussbaum (2003) notes. This is an especially important issue once we note that the capabilities approach is useful within sustainability economics because it provides a more objective conception of human well-being, where we can focus on objective functionings to be achieved with a finite quantity of commodities.

Such an objective approach stands in contrast with the vague emphasis on subjective preferences that are never fully satisfied with finite resources that prevails in neoclassical economics, which is an important reason why ecological problems are not addressed in a satisfactory way (Dodds, 1997; Martins, 2016). The emphasis on subjective valuation drawing on a market logic is part of an anthropocentric view where biophysical constraints are not adequately taken into account, and the classical circular economy advanced in Martins (2016) is aimed precisely at changing this state of affairs. Thus, the emphasis on a more subjective or objective approach to human well-being and valuation has important implications for the way in which the capabilities approach, and a classical circular conception, can contribute to problems of sustainability.

So if we want to focus on a more objective description of human well-being, such as the one undertaken by the classical political economists, we must look at Sen's (1980) original emphasis on basic capabilities when first advancing the capability approach, or at Nussbaum's more objective elaboration of the capabilities approach, rather than at Sen's (2017) more recent writings, which are indeed a return to Sen's (1970) earlier contributions on subjective preferences as a basis for (possibly partial)

orderings, in line with the contribution of various authors of the Cambridge tradition from Sidgwick to Sen.

The way in which Sen integrated his views on basic capabilities (Sen, 1980) within his overall views on rational and social choice theory (Sen, 1999, 2009, 2017), in order to try to reach a consensus for social decisions, has not yet been addressed in the recent surge of literature on the capability approach and sustainability economics (Ballet, Bazin, Dubois, and Mahieu, 2011; Ballet, Koffi and Pelenc, 2013; Birkin and Polesie, 2013; Demals and Hyard, 2014; Martins, 2011, 2013, 2016; Pelenc and Ballet, 2015; Polishchuk and Rauschmayer, 2012; Scerri, 2012). But this tension between subjective and objective notions has profound implications for sustainability economics, as can be seen by Sen's (2013) own critique of the notion of needs when addressing sustainability.

So if Sen's capability approach, or Nussbaum's capabilities approach, are to be developed consequentially when addressing sustainability economics, this tension between subjective and objective elements must be further scrutinised. If we adopt a *capability* approach where there is a broader conception of freedom, we are led in a more anthropocentric direction where Nature and its ecosystems are always valued in terms of human well-being, which tends to be assessed in a more subjective way, while assuming that human preferences are never satisfied.

If we adopt a *capabilities* approach where human capabilities are seen as more concrete and objective functionings that can be achieved with a finite set of resources, we can place human activity as part of a broader biosphere, with important implications for ecological sustainability. This is, of course, part of a more profound divergence between Sen's *capability* approach and Nussbaum's *capabilities* approach, which were very similar when they were first advanced by both authors as a common approach. But



they started to move in different directions as Sen and Nussbaum both tried to integrate the capability or capabilities approach within their different overall vision of the world, while also trying to find ways of achieving a consensus between various persons. In so doing, there was also a neglect of the need of an ontological analysis of physiological and social structures, which is indeed the most promising strategy for developing the capabilities approach (Martins, 2006, 2007; Smith and Seward, 2009).

This dualism between Sen's *capability* approach and Nussbaum's *capabilities* approach can be fruitfully connected to a remark on wages made by Sraffa (1960, p. 9), in which he notes that "besides the ever-present element of subsistence, they may include a share of the surplus product." Thus Sraffa (1960, p. 9) writes: "In view of this double character of the wage, it would be appropriate, when we come to consider the division of the surplus between capitalists and workers, to separate the two component parts of the wage and regard only the 'surplus' part as variable; whereas the goods necessary for the subsistence of the workers would continue to appear, with the fuel, etc., among the means of production." A fruitful strategy for developing a more general approach drawing on this distinction between the "subsistence" and the "surplus" component of the wage is to use Nussbaum's more concrete view on capabilities when setting the "subsistence" component of the wage, and Sen's more general view of capabilities when addressing the "surplus" component of the wage, as argued in Martins (2014, pp. 374-375). But in so doing, Sen's more general view must be used drawing on an Aristotelian ontology, in order to avoid going in a too subjective direction, to which one may be led if engaging in social choice based on subjective preferences. The reduction of human well-being to subjective mental states is much criticised by Sen (1980) when first advancing the capability approach, even if earlier work (Sen 1970) and more recent contributions (Sen 2017) seem to concede much in this direction.

These are aspects that certainly deserve further discussion within the vast and expanding literature on the use of the capabilities approach in sustainability economics, so that the capabilities approach can find a relevant role within sustainability economics (Martins, 2013), one which is not constrained by a too vague conception of human freedom with implications for its application to problems of sustainability (Sen, 2013). But for the present purposes, what I wish to highlight is the connection of the more objective conception of human well-being that underpins the capability approach, and Sraffa's revival of classical political economy. Sraffa's revival of classical political economy presupposes an objective analysis of the physiological and social conditions that determine a certain standard of living. The capabilities approach provides a suitable route for the achievement of a general theory for the selection of those commodities taking into account the capability to convert commodities into well-being in different contexts, especially if the route followed is an ontological one (Martins, 2016), within a circular conception of the economy.

## **6. Concluding remarks**

It is important to note that the emphasis on a classical circular economy in Martins (2016) and the idea of a Sraffian ecological economics in Verger (2017) adopt very different attitudes toward the role of Sraffa's theory. Verger (2017) is concerned with advancing what may have been the final views of Sraffa in his book *Production of Commodities* (1960). In Martins (2016), in contrast, the aim is to use elements from Sraffa's contributions which need not be his final views (just like the elements taken from Sen's capability approach and Nussbaum's capabilities approach when advancing the idea of a classical circular economy need not be their final views, as argued above).

However, I do believe that the ideas expressed in Martins (2016) capture quite adequately Sraffa's (1960) underlying vision of the economy and society, traces of which can be found in his book, with specific indications by Sraffa (1960, p. 10) as to the greater appropriateness of the more objectivist vision of some of the classical political economists. Subsequent developments in economic theory led to a more anthropocentric view, in which value depends on irreducible subjective preferences. The capabilities approach, which has been much debated recently in connection with sustainability economics, also faces the same risk of leading towards a more subjective direction, for the reasons noted above.

I have argued that in order to apply the capability approach, or perhaps more specifically a *capabilities* approach, within sustainability economics, we must focus on those aspects advanced by Sen and Nussbaum that are more relevant for an objective notion of a classical circular economy. Those aspects are to be found essentially in Sen's and Nussbaum's original formulation of the capability approach, but have been more emphasised by Nussbaum in her *capabilities* approach, and especially in her earlier contributions on the Aristotelian notion of human functioning. This enables taking into account variations in physiological and social conditions across space and time when considering the specific commodities that enable satisfying basic needs, so as to achieve a more general theory drawing on the capabilities approach.

The capability approach was originally advanced by Sen (1980) as a critique of the Rawlsian emphasis on primary goods, and the utilitarian emphasis on subjective well-being. The originality of the capability approach was that it asked ultimately ontological questions, such as "what is well-being", while providing an objective conception in terms of an Aristotelian notion of human *functioning*. But the attempt to reach more general assessments of well-being without recognising this ontological

dimension led the two main proponents of the capability approach, Sen and Nussbaum, in the direction of the two different theories which were criticised by Sen (1980) when the capability approach was first advanced: Nussbaum into Rawls' political liberalism, and Sen into a more subjective approach in line with Mill's conception, as Nussbaum (2003) argues. The subsequent developments of Sen's and Nussbaum's contributions were aimed at engaging with Rawls's political philosophy, either accepting it (Nussbaum, 2003) or rejecting it (Sen, 2009). This engagement with Rawls's political philosophy also contributed to a different emphasis from the one we find when Sen and Nussbaum originally advanced the capability approach.

A similar story can be told regarding Sraffa (1960), who presented his theory partly as a basis for a critique of marginalist theory. This engagement with the dominant economic theory, in order to refute it, led Sraffa to leave out of focus the more objective approach of the classical political economists, and its objective conception of human needs. But Sraffa (1960, p. 10) still insists in his book that such an objective conception constitutes the more appropriate approach. And even if he did not do so, it would remain true that an ecological economics needs to be one in which the needs of human beings can be more objectively conceptualised as finite needs. While there may be different views on what Sraffa, Sen, Nussbaum, and many other authors can (or cannot) offer in this direction, I hope to have shown that the ideas they presented, albeit changing through time, do contain important insights in this regard, especially when we focus on the stages of their research when they focused on a more objective conception of the standard of living.

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