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The Political Economy of Charles Richard de Butré

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Abstract :

From 1759 to 1762, François Quesnay had systematically appealed to an obscure physiocrat, Charles Richard de Butré, when he had to make a numerical estimate or to do a non-elementary computation. In the present article, we use two important unpublished writings by Butré to discuss and assess the extent of his contribution to physiocratic theory. In these two works written at the end of 1766 and the beginning of 1767, Butré set himself to the task of deepening Quesnay's political economy. Although he was, besides Quesnay, the only physiocrat who mastered the *Tableau économique*, he chose to develop his own analytical devices. In order to provide a more satisfactory presentation of the doctrine of the exclusive productivity of agriculture, Butré modified significantly the social classification adopted by Quesnay and all the other physiocrats. Finally, he imagined and drafted a theoretical system of public accounting that would measure and account for all kinds of economic activities, including those Quesnay had left out in his *Tableau économique*, such as external trade. We argue that the study of his work offers us an ideal vantage point to broaden our understanding of the nature and the history of Quesnay's political economy.

Keywords: Physiocracy ; Physiocratic Theory ; François Quesnay ; Charles Richard de Butré ; Tableau économique

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I. Introduction

From 1759 to 1762, François Quesnay had systematically appealed to an obscure physiocrat, Charles Richard de Butré (1725-1805), when he had to make a numerical estimate or to do a non-elementary computation (Charles and Théré 2008). The latter, although hardly mentioned in the secondary literature, was an important collaborator of Quesnay. In the present article, we use two important unpublished writings from Butré to discuss and assess the extent of his contribution to physiocratic theory. These two texts written at the end of 1766 and the beginning of 1767 are: An essay Butré submitted the famous prize competition set by Turgot in Limoges in 1766-1767 on the subject of indirect taxes, and a short theoretical treatise – *Elémens d’oeconomie politique*.

In these two works, Butré set himself to the task of deepening Quesnay’s political economy. Although he was, besides Quesnay, the only physiocrat who mastered the *Tableau économique*, he chose to develop his own analytical devices. In order to provide a more satisfactory presentation of the doctrine of the exclusive productivity of agriculture, Butré modified significantly the social classification adopted by Quesnay and all the other physiocrats. Finally, he imagined and drafted a theoretical system of public accounting that would measure and account for all kinds of economic activities, including those Quesnay had left out in his *Tableau économique*, such as external trade. As Butré worked on these texts when Quesnay was developing and applying the “Arithmetical formula”, the mature version of the *Tableau*, we argue that the study of his work offers us an ideal vantage point to broaden our understanding of the nature and the history of Quesnay’s political economy.

In the next section, we detail Butré’s participation to the physiocratic movement throughout the 1760s. In the third section, we discuss a short treatise of political economy written by Butré and his contribution to physiocratic social analysis. In the fourth section, we

present a rational reconstruction of the economic theory of Butré. In a final section, we provide a systematic comparison of the economic analysis of Quesnay's *Tableau économique* and Butré's *Elémens d'oeconomie politique*.

II. Butré and physiocracy 1760-1767

From the end of the 1750s, Butré, a bodyguard of the king by trade, was dedicating a significant part of his time to the study of political economy.¹ Up to 1762, he participated to several texts Quesnay was writing with the marquis de Mirabeau. Butré's contribution concentrated on the accountings and computations embodied in these works.² Accounts and calculations as well as short texts from Butré appeared in the drafts of Quesnay and Mirabeau's main work from the early 1760s: the *Tableau oeconomique avec ses explications*, *Théorie de l'impôt* and *Philosophie rurale*. In the *Tableau oeconomique*, Butré provided help in the first draft of the several new *Tableaux économiques*, doing most of the computations (INED 2005, XXIV). In the *Théorie de l'impôt*, Butré was one of the three *calculateurs* that Quesnay employed to provide data on the French agriculture and tax incomes and to verify the several computations he made (INED 2005, p. 1185). In the preparation of *Philosophie rurale*, Quesnay relied heavily on Butré in the preparation and verification of the numerous computations that were embodied in this work. Butré also provided the three agricultural accounts that were inserted in the final text (Quesnay and Mirabeau 1763, pp. 238-242, pp. 254-56).

¹ For a general biography of Butré, see Reuss (1887); for a (shorter) intellectual biography and a listing of the archives where manuscripts from Butré can be found, see Charles and Théré (2013b).

² These writings are available in the Mirabeau's papers located in the French National Archives. We give a detailed listing this archive in INED (2005, II: pp. 1225-1330). We have detailed Butré's work for Quesnay and Mirabeau in Charles and Théré (2008 and 2012).

In parallel to his work with Quesnay and Mirabeau, Butré began to develop his own contributions to physiocratic political economy. In 1761, he presented several economic texts to the royal agricultural society of Paris.³ In 1762 or 1763, Butré wrote an interesting *Mémoire sur la liberté du commerce des grains* for an agricultural society, probably that of Paris.⁴ After he left Versailles, the physiocrat stayed in touch with François Quesnay who encouraged him to collect agricultural accountings. The latter believed that Butré would be able to provide a solid empirical basis for physiocratic theory. A few years later Mirabeau, would describe Butré as one of the best physiocrats, a “direct pupil of the venerable doctor Quesnay and this commendable old man saw him as unique in his kind and the most useful of all... The inventories of cultivation, published in the first volumes of the former *Éphémérides* are from him⁵.” In another letter, Mirabeau emphasized that besides Quesnay Butré was the only physiocrat who can claim to master the *Tableau économique*.⁶

The project of a systematic collection of agricultural accounts gained momentum when a debate broke out on the notions of *grande* and *petite culture* in the mid-1760s. The discussion took place in several economic periodicals such as the *Gazette du commerce* (later

³ Butré was one of the funding member of the society. The publication released by the Society in 1762 mentioned that Butré presented a *Mémoire sur la population* in a session held on 11 July 1761 (An. [1762], p. 44). Finally, in the *Philosophie rurale*, there is a text titled *Progression de la réparation de l'agriculture, par l'abolissement des causes de son dépérissement. Mémoire communiqué à une Société d'agriculture* that, we believe, can be attributed to Butré: neither Quesnay nor Mirabeau ever presented one of their text to an agricultural society and the text itself, full of computations and statistical details is typical of Butré's work from this period (Mirabeau et Quesnay 1763, pp. 286-295).

⁴ Two copies, including one with notes and corrections from Quesnay's hand, have been preserved. See INED 2005, p. 1321.

⁵ Riksarkivet (Stockholm), Schefferska samlingen, Skrivelser till Karl Fredrik Scheffers, box 5. Mirabeau to Scheffer, June 30, 1778, ff. 50r-50v. Mirabeau added “Above all the doctor desired that he be employed to do this types of surveys, which he makes with a zeal, a skill, a disinterestedness that have no equal, and that he be in charge of raising pupils in this matter.” See also ff. 36v and 52r for further praises and details.

⁶ See Mirabeau to Butré (December, 16th 1777), in *Suite de la correspondance de Bade*, Bibliothèque de l'Arsenal, ms 12 101.

Gazette de l'agriculture, du commerce et des finances), the *Journal oeconomique* and the *Journal de l'agriculture, du commerce et des finances*. It was also echoed in the sessions of the agricultural societies – a dozen were founded from 1761 to 1763 – and discussed in several agronomic and economic publications from this period.⁷ It is in this context that Butré published his first article, a letter on the “*grande et la petite culture*”, in the September 1766 issue of the *Journal de l'agriculture*. In this short text, the physiocrat explained the principles of agricultural accounting. He pointed out the necessity to establish rigorous microeconomic categories in the accounting of individual farms, in order to use them as material for economic discussions (Butré 1766). At the end of the letter, the editor-in-chief – Du Pont de Nemours – advertised the project Butré was conducting and announced its imminent publication.

All the same, it took almost a year for Butré to give a more significant piece on the subject in the *Ephémérides du citoyen*. In a series of four articles, Butré elaborated a macroeconomic analysis of French agriculture on a dozen detailed agricultural accounts. In the first two texts from the series, the physiocrat offered a nuanced view of the distinction between *grande* and *petite culture*. Instead of sticking strictly to the binary opposition established by Quesnay and disseminated by Du Pont, Butré chose to cut down each of these two categories in three sub-categories or ‘types’ of agricultural units of production.⁸ In contradistinction to his predecessors, Butré detailed the technologies used by different kind of cultivations – something that was commonly done in the husbandry manuals but not in the

⁷ For a detailed discussion, see Charles and Théré (2013a).

⁸ See Quesnay (1756 and 1757) and Du Pont (1765). Butré separated *Grande culture* into “*grande culture opulente* (wealthy large-scale cultivation)”, “*grande culture moyenne* (average large-scale cultivation)”, “*grande culture foible* (weak large-scale cultivation)” and *petite culture* into “*petite culture du premier ordre* (first-rate small-scale cultivation)”, “*petite culture du second ordre* (second-rate small-scale cultivation)” and “*petite culture du troisième ordre* (third-rate small-scale cultivation)”.

physiocratic literature.⁹ He related this discussion to the argument that a lack of capital invested in the production was the main cause of bad economic returns. For example, Butré argues that the plowing technology used in *petite culture* for sowing saves seeds and needs lower advances, but at the expense of using much more labor as well giving as much lower returns. Hence, it was on the whole less productive, that is its rate of return of capital invested was lower than that of the plowing technology used in the *grande culture* (Butré 1767b, XI, pp. 71-81). In the third article from the series, the physiocrat goes on to average the values of rent and taxes he obtained from his several farms' account to provide a general estimation of the proportion between the amounts of net product and taxes collected by the state. In it, he used his microeconomic measurements to provide macro estimates of agricultural income and taxes.¹⁰

Butré stands out among Quesnay's followers as the one who was willing and able to link together these two levels of analysis of (agricultural) production. He went beyond a purely empirical inquiry and analyzed the articulation between theory and measurement. In order to tighten up the link between the micro and macro level, Butré developed new tools such as linear algebra as an aid to develop and test his arithmetical model of the economy (see Charles and Théré 2013b). The physiocrat first used this new approach in the essay he submitted to the literary competition opened by Turgot, intendant of the generality of Limoges, and the Limoges Royal Agricultural Society on the effects of indirect tax.¹¹ The

⁹ See among other examples the very successful manuals of Henri-Louis Duhamel du Monceau (1751, 1762). On the other hand, the husbandry manuals did not link technologies and returns to the amount of capital invested, a prominent point in the physiocratic literature.

¹⁰ The macro evaluation of agricultural product and income is found in Butré (1767b, XI, pp. 83-99) and for taxes: (1767b: XI, pp. 100-110). For a more general perspective of the issue of the passage from micro to macro level in physiocratic writings, see Perrot (1992).

¹¹ On the relationship between Turgot and the royal agricultural society see Dakin (1980: 79-91). On the history of this competition, see Decroix (2006, pp. 97-99). To our knowledge, Butré's contribution to the prize has never been discussed in the secondary literature. The draft of the essay sent by Butré, which we discussed

theme of this competition had been chosen by Turgot and it was made public in January 1766 in several periodicals. Butré's text arrived in December 1766. Butré's essay did not win the prize and it did not even obtain a mention by the jury.¹² Turgot, a man well-versed in the sciences of his time, commented harshly on Butré's essay and the fact that it contained algebra (Turgot 1766, p. 520). It is safe to assume that the form of Butré's dissertation – short, filled with algebra with minimal comments and in general quite rough – did not appeal to the members of the Limoges society. More generally, it was clearly at odd with the rules of the academic dissertation genre.¹³

Butré had modeled his submission to the Limoges contest upon the blueprint of Quesnay's *Problème économique*. After a brief presentation of his economic principles and analytical apparatus, Butré rephrased the prize competition subject as a “problem”. Indeed, we can reconstruct a detailed sequence that runs from the publication of Quesnay's “Problème économique” in the *Journal d'agriculture, de commerce et des finances* in August 1766, to Butré's dissertation presented to the Limoges society in December of that same year to Quesnay's “Second problème économique” included in the collected volume *Physiocratie* and published at the end 1767. In his first “Problème économique”, Quesnay adhered to a form of presentation completely new for works in political economy; a form that he borrowed from

here, is in Archives Départementales (AD) Indre-et-Loire, C101. The document is 17 pages long and begins on page 3: The first two pages are missing. It is likely that the version received by Turgot differed somewhat from the draft. At one point Butré wrote for himself that a part of one of the tables should be removed from the version he is going to send (Butré 1766b, 9). We looked for the copy actually sent to Limoges in the AD de la Haute-Vienne, but we have not been able to recover it, nor any of the dissertations that were sent for the competition.

¹² Two dissertations were awarded by the jury: The first one who won the contest was written by the physiocrat Saint-Pérvay; a second one written by Graslin, critical of physiocratic theory, had a special mention from the jury.

¹³ For these rules, see Caradonna 2009, pp. 657-58.

the contemporary mathematical manuals.¹⁴ The only significant variant introduced by Butré is that he provided an outline of his theory before stating the problem with a question while Quesnay began with a specific question.¹⁵ In his second economic problem, Quesnay began with a set of preliminaries and tables, thus adopting exactly the same structure as that of Butré's dissertation (Quesnay 1767, pp. 620-625). The parallel between the two texts goes even further since, in his second problem, Quesnay proposed his own solution to the problem set by the Limoges society, that is "the difference between the consequences of indirect and direct taxation".¹⁶ These evidences and documents from the archives strongly suggest that Butré and Quesnay kept informed each other on their respective works and probably met in Paris.¹⁷

If the two texts share the same formal structure, they develop alternate means to estimate losses due to indirect taxation. While Quesnay used his *Tableau économique* and arithmetical computations, Butré created something completely different. First, he developed

¹⁴ For a thorough discussion of this type of presentation and its origins in mathematical manuals, see Charles & Théré (2013b).

¹⁵ It should be said, though, that Quesnay had published two months before, in the same periodical, "Formule arithmétique du Tableau économique", which provided his general model of the economy. Hence, he probably did not feel the need to present it once again and went straightforwardly to answer the specific economic question that the problem was to answer.

¹⁶ Indeed, Du Pont who edited *Physiocratie*, stated that Quesnay in this text solves a "question, that was the object of... the royal agricultural society of Limoges... prize contest" (in INED 2005, p. 619).

¹⁷ First, there is an exchange of detailed letters between the two men from a slightly later date (1772) on philosophical subjects. Second, there is in the set of papers from the AD Indre-et-Loire, a document labelled "Explanation of the Tableau in four columns" and the only occurrence of a printed Tableau is the one in Quesnay's "Second economic problem". Finally, Quesnay asked the agricultural society of Orléans to include Butré as an associated member in early 1767. See AD Indre-et-Loire, C 101; Quesnay (1767), and BM Strasbourg, ms 836. Indeed, Quesnay's high esteem of Butré surfaced in the letter the secretary of Orléans society wrote to Butré. It reads: "Mr Quesnay, Sir, has made the agricultural society of Orléans hope that you would be kind enough to accept a position of foreign associate to his works that we are happy to offer you. He told us about the deep knowledge you have on all the parts of agriculture and economic science...", Loiseau to Butré, 16 May 1767, BM Strasbourg, ms 836.

his own kind of tables.¹⁸ Since Butré did master the complexities of the Tableau, we must assume that Butré was not satisfied with Quesnay's method of exposition. His decision might be explained by the fact that Butré later calculated several ratios using algebra. This task would have been much more complex and clumsy if he had used Quesnay's Tableau, which is as the history of the interpretations of the Tableau économique shows not so easy to translate into a set of linear equations (Charles 2008).

III. The *Elémens d'oeconomie politique* and physiocratic analysis

Butré felt the need to provide a theoretical blueprint to his Limoges essay. In the latter, he wrote: “*in my Elémens d'oeconomie politique, I will detail further the reciprocal effects of taxation on the productive and sterile parts [i. e. sectors]* (Butré 1766b, p. 11; italics in the original). Indeed, there is in his papers a small treatise on political economy who bears that name. In what remains of Butré's papers in the departmental archives of Indre-et-Loire, the different parts of the draft of *Elémens d'oeconomie politique* are dispersed. We have been able to reconstitute the entire document, which is made of five sections. Four of them are subtitled “*1er cayer*”, “*2e cayer*”, “*3e cayer*” and “*4e cayer*” (“first notebook”, etc.). The last document has no title and consists mostly of seventeen tables that abstract the calculations made in the notebooks and their results, and we have been able to establish that the latter was the continuation of the second notebook.¹⁹ According to the plan of the work Butré set in the introduction, the manuscript we have recovered and reconstructed is complete.²⁰

¹⁸ The tables, with only a few changes in the values Butré used, also figured in his next writing *Elémens d'oeconomique politique*. We reproduced these latter tables in the appendix of this article.

¹⁹ Each of the notebooks was paged independently and continuously – respectively 1-8, 1-15 [with the 17 tables], 1-15 and 1-10. The pagination of the unnamed document continues that of the second notebook. Thus, these notebooks are more or less equivalent to chapter divisions; it was a common practice of eighteenth-century (economic) writers.

Butré conceived of *Elémens d'oeconomie politique* as an advanced manual intended for economic experts, or “*calculateurs*” as he called them. In that respect, Butré was faithfully following the intent of his old master Quesnay, who concentrated on economic theory, rather than that of the other physiocrats who were more interested in writing for a wider public. According to Butré, his work would be of great help for enlightened governments and their administration: it would provide them with a method to establish accurate public accounts and to measure the economic consequences of policies (Butré 1767a, notebook 1, f.3). Strangely enough, the physiocrat undertook this very ambitious program of research in the quiet of his provincial estate with very little contact with the outside world – except for his privileged relation with Quesnay.²¹

Butré began the *Elémens* with an exposition of the principles and definitions he uses throughout his text. The “second notebook” begins with a “Short statement and distribution of the annual productions of a territory and of their preparation for the annual consumption of the nation and the [export] to foreign countries”. It includes seven tables in total, which are, like the Tableau économique of Quesnay, based on fictitious data – we have reproduced them in the Appendix. According to Butré, the real point of his treatise was in the general method it provided; hence, it was not necessary to use real data.²² Indeed, Butré filled the *Elémens* with

²⁰ The text is made of two parts. The first notebook is a general introduction, then there is a general inventory of “a general account of the annual productions of an agricultural kingdom” (notebook 2) with seventeen tables (unnamed document). Butré continues: “we will finish this part with nine problems with their analytical solution” (notebook 3). Finally, “the second part [of the *Elémens*] will give the computation of the effects of an indirect tax...”, which is the fourth notebook.

²¹ We have been unable to find even one reference to the *Elémens* in all the physiocratic corpus, including correspondences. It is therefore unclear whether Butré ever shared his findings with someone. According to Mirabeau’s testimony, Butré was a modest and self-effaced individual – contrary to most of his physiocratic colleagues one may add.

²² The latter was the purpose of the series published in the *Ephémérides* we have discussed in the preceding section.

all the main theoretical ratios one needed to implement the physiocratic art of government into the real world. A physiocratic government needed only to collect empirical observations and put them in the blueprint written by Butré in place of his hypothetical figures. The physiocrat invited somewhat grandly “our calculators to turn their research in this direction in order to deepen our knowledge of a subject-matter so fundamental to the happiness of nations.” (Butré 1767a, notebook 1, p. 3)

The *Elémens d'oeconomie politique* can be considered as a long term result of the work Butré had undertaken for Quesnay in the early 1760s. In effect, his new work shared significant features with one of the sections of the ninth chapter IX of *Philosophie rurale* in which the authors provided a method to construct *Tableau économique* and to calculate their data according to the different prices of wheat a government may be confronted with (Mirabeau and Quesnay 1763: p. 210-225).²³ However, Butré did not follow blindly the *Philosophie rurale* and, more generally, the theoretical principles of Quesnay but developed his own interpretation of these principles. At the general level, Butré did not focus on the creation of net product as the doctor clearly did, especially in his writings from the 1766-1767 period, but investigated the detailed working of the “economic machine”.²⁴ In the *Tableau économique* the “advances” (capital investments) and, more generally, the expenditures of each class to the others figured prominently. By contrast, the intra-sectorial expenditures were

²³ The section was headed by the following title : “Rules to create in concise form the Tableau in every case where the advances of the productive class return more or less than one hundred per cent in net product, and where we suppose no other causes of neither decline nor growth in the annual reproduction” (*Règles pour former en abrégé le Tableau dans tous les cas différens où les avances de la classe productive donnent plus ou moins que cent pour cent de produit net, & où l'on ne suppose point d'ailleurs de causes de dépérissement ni d'augmentation dans la reproduction annuelle.*)

²⁴ “Before determining the effect of a chain, it is necessary to know each of its parts, therefore I begin by detailing those that form the economic machine” (Butré 1767a, notebook 1, f.1). The expression “economic machine” can also be found in the Quesnay and Mirabeau’s writings as well as in Graslin’s Essay (Charles 2003, p. 536; Graslin 1767, p. 160 and 213).

not detailed and are mentioned only in the comments of the Tableau – sometimes they are even completely left out of the picture (literally). In the *Elémens*, Butré was less concerned with the function of the advances in capital in the economy. In the introduction, he gave traditional definitions of the *avances primitives* and *avances annuelles* without further comments. Conversely, he detailed the intra-sectorial expenditures for each sector in his tables and produced new and interesting insights in this regard (see below section 4 and Annex).

Another aspect that somewhat puts Butré's work aside from that of Quesnay, even if the latter was also very aware of the possible applications of his theory, is that Butré showed a very keen interest in making his analysis as realist as possible. He stated that the figures included in his tables should not be taken at face value, but need to be reworked to fit the data that an extensive survey of the wealth of the nation would provide.²⁵ According to Butré, each state should organize the data collected into two synthetic documents. First, each nation should establish what Butré called an *état constitutif*, that is “a general account of the annual productions of an agricultural kingdom” and of their distribution. This *état constitutif* uses the categories created by Quesnay and exposed in the *Philosophie rurale*. These categories are: “the income or net product of land properties”, “the annual advances of the productive sector”, “the return of these advances”, “the payments of agricultural undertakings of all kinds and made on all types of lands”. This *état* is therefore a detailed inventory of the wealth created annually by the productive sector (the agriculture)²⁶. This general inventory is to be completed with what Butré called the “political map of the nation”, that is, on the one hand, the trade flows between the different sectors of the economy and, on the other, the international trade of the nation. There is no equivalent of this “map” in the writings of

²⁵ On the role of survey in the physiocratic thought, see Perrot (1992) and Charles & Théré (2012).

²⁶ Butré goes into even more details as to the exact nature and details of the inquiry in his text published in the *Éphémérides du citoyen*, see Butré (1767b: XI, pp. 83-114 and XII, pp. 75-88).

Quesnay and his other disciples. Indeed, Quesnay did not provide a set of complete and coherent remarks on the role of international trade and, as commentators pointed out, he seemed to have changed his mind on cross-industry as well as international trade.²⁷ For Quesnay, these issues had little significance as long as they do not impact the reproduction of wealth (net product). Butré had a different opinion and, as we will see in the following, he believed that the level of net product was not the only variable to consider if one wanted to realize the “full potentialities” of the “economic machine” (Butré 1767a, notebook 1, p. 8).

Further comparison with Quesnay’s theory shows that Butré modified it on one essential point: the number and composition of social classes. As we have shown in table 1 below, Butré did not completely overturned the functional classification proposed by Quesnay, but recombined it by moving the frontier between productive and unproductive activities. First, Butré redefined the “productive class” (*classe productive*). For Quesnay, this class comprised the people who worked in agricultural production (including the agricultural entrepreneurs or farmers), but also, and it is a point often missed by commentators, the rural trade (*commerce de la première main*); that is the traders that carry the agricultural good from the location where it is produced to the market where it would be first sold (INED 2005, pp. 669-670).²⁸ As M.-F. Piguet (1996, pp. 46-50) has shown, in Quesnay’s writings classes and their frontiers are defined by the place each social groups takes in the circulation and production of income.²⁹ Hence, rural trade, which was an essential part in the valorization of

²⁷ The changing views of Quesnay either on inter-sectional flows or in international trade in the different versions of the Tableau économique are documented in Meek (1962) and Herlitz (1961 and 1996).

²⁸ Hence it does not include the retail trade that took place after the first sale of agricultural good (See Vaggi 1987, pp. 28-36).

²⁹ Butré carried on Quesnay’s choice. For him, the agricultural class reunites the agents who contribute to the production of net product, the class of proprietors reunites those who by right possess the net product and the sterile class, those who neither produce nor possess net product (Butré 1767a, notebook 1, 5). The difference lies in their different interpretation of what is production.

agricultural production and in the creation of a net product – without trade agricultural products would have no price and create no value –, was productive. However, the choice of including rural trade in the productive class was also ambiguous, since trade like manufacturing is, as the physiocrats repeated *ad nauseam*, a sterile activity. Quesnay's solution in the *Philosophie rurale* was to classify rural trade among the productive sectors, but at the same time to reassert that its activity produced no net product by itself.³⁰

Quesnay	Class of proprietors	Productive class		Sterile class	
Social groups	Landowners	Farmers and other agricultural workers	Rural trade (<i>commerce de la première main</i>)	Other trades and industrial activities for marketing and processing food	Other types of manufacture (textile, etc.)
Butré (extended)	Class of proprietors	Agricultural class	Nutritive class		Industrious class
Butré (synthetic)	Productive class		Sterile class		

Table 1
Social classes according to Quesnay and Butré

Butré's solution was both different and interesting. The system of Quesnay has two sectors, each producing a different kind of goods – agricultural for the productive sector and

³⁰ The ambiguity is clearly apparent in the cumbersome justification provided by Quesnay and Mirabeau in the seventh chapter of the *Philosophie rurale*: "These last parts of the productive class, that is the *bestiaux de profits* (cattle) and the costs of rural trade, which cooperate in the production of income, but do not give income are not included in the Tableau, which shows the order of the distribution of expenditures and the reproduction of income... Because they do not produce income, they cannot enter in the picture of the distribution and reproduction of income" (Mirabeau and Quesnay 1763, p. 137). Hence they are productive, but they do not produce any net product.

manufactured from the “sterile” sector – and three classes; Butré’s social theory is based on four classes instead of three in Quesnay’s *Tableau économique*, and three economic sectors or “*commerces*” (trades) that produce three types of goods.³¹ He put off the rural trade from the productive class and reunited it with the other agents that process, prepare and market foodstuff in a new “nutritive class” (*classe nutritive*). Moreover, he redefined the productive class as comprising not only those who work the land but also those who possess it and he opposed it to the sterile class which includes the workers, traders and entrepreneurs who use agricultural goods as inputs for their own economic activities (Butré 1767a, notebook 1, f. 4-5). In moving the rural trade from the productive to the sterile class, Butré tried to overcome Quesnay’s ambiguity by erasing all the non-agricultural activities from the productive class. Moreover, by reuniting the class of landowners to the productive class, his segmentation also acquires a greater political clarity: In Butré’s *Elémens d’économie politique*, the divide between people who are living on agriculture, whether from their work or from their rents³² and people who earn their living by transforming these agricultural products into something else, either food or manufactured goods, is made self-evident. However, it is also an important change made to Quesnay’s economic theory, which classifies as “productive” only the social groups that cooperated directly to the creation of net product, which is not the case for the landowners.

Butré also introduced a completely new idea: the products of the agricultural class cannot be directly consumed by the people, they first need to be transformed into consumption goods. Hence, agricultural goods are used as intermediary consumptions by two other classes/sectors, the “nutritive class” that produce agricultural consumption goods and the “industrious class” that produce manufactured goods; these two classes formed together

³¹ The fourth class, the class of landowners does not produce anything.

³² In the physiocratic doctrine, taxes can be considered as a kind of rent since the king co-owned the net product.

the “sterile class”.³³ The first sector that is either called “productive” or “property trade” (*commerce de propriété*) produces the raw agricultural goods. The second sector, the comestible trade (*commerce comestible*), transforms raw agricultural products into food fit for consumption.³⁴ Finally, the third sector is the industrial trade (*commerce d’industrie*) which transforms primary goods into manufactured ones. Only the agricultural sector yields a net product or income distributed into rent, tithe and taxes (Butré 1767a, notebook 1, f. 4-7). Like in the *Philosophie rurale*, the advances are made by entrepreneurs that perceive a payment as well as the interest of their advances. Two final points are worth emphasizing. In the first place, if Butré evoked and defined the “primitive advances” in his text, they did not appear in the economic categories used in the tables³⁵. In the second place, the return of annual advances which were supposed to be 100% in the generic case of the *Tableau économique* (the so-called “state of bliss”), are fixed in the *Elémens* at five seventh that is slightly more than 70% (Butré 1767a, notebook 2, f. 1 and 3). Therefore, the economic model used by Butré introduces new features compared to the one used by Quesnay.

IV. Butré’s economic model in modern guise

The complexity of Butré’s text – to say nothing of his style of writing – and the fact that he modified Quesnay’s economic and social vocabulary makes it somewhat difficult to grasp all the meaningful aspects of his theoretical work. Therefore, we have decided to

³³ Butré described these two classes as *classes préparantes*, which translated literally as “classes that prepare” (Butré 1767a, notebook 1, f.5).

³⁴ According to Butré, this sector includes among others, “millers, bakers, butchers, grain and wine merchants” (Butré 1767a, notebook 1, f.4).

³⁵ It should also be noted that Butré (Butré 1767a, notebook 1, f. 6) made clear in his definition that each sector/trade makes primitive advances.

rewrite his general presentation of the functioning of the economy in modern economic language. In this way, we will be able to isolate more easily its salient elements and results and to compare them more systematically with those of Quesnay. We based our rational reconstruction on the numerical presentation Butré gave in the “Short statement and distribution of the annual productions...” and reproduced at the end of this text in appendix. Through no less than seven generic tables, Butré detailed the value produced by the three sectors of an economy and their costs of production. We used these tables as a blueprint for creating a very simplified national accounting system of expenditure and income of the economy. Moreover and for the sake of comparison with Quesnay’s analysis, our presentation of Butré’s economic model is inspired from Walter Eltis’s presentation of the *Tableau économique* (Eltis 1975).

First, Butré detailed the functioning of the productive sector in the first two tables from his second notebook (see annex). From these tables, we can write two equations that summarized the production and demand functions of the productive sector (the agriculture).

Let be Y_p the total income of the productive sector (1500). It is equal to the annual advances I , which comprised non-monetary advances in subsistence AC (food given to animals and men, that is 300), wages paid to servants and day-laborers W_p (280) and in spending in fixed capital K (120), to which is added the interest of the advances and the profit made by the agricultural entrepreneurs P_p (300) and finally the net income (*produit net*) R (500).

$$(1) Y_p \equiv AC + W_p + K + P_p + R$$

The productive sector produces two goods, raw food and subsistence goods SG and primary goods PG , which are used as intermediate goods by the two other sectors or exported and to which we add the part which is paid in kind for subsistence, AC . Hence, we can write the demand function for the productive sector as such:

$$(2) D_p = SG + PG + AC$$

The third and fourth tables are likewise used to write the production and demand functions of the food trade (or sector). The output of the food sector is equal to the inputs in raw food SG_f and the cost of preparation of these goods C_f , which comprised the costs of production and transportation, the interest of the advances and the profit of the entrepreneurs of this sector. The technique of production is fixed and such that each two units of raw goods used produces three units of food. The returns are constant. Finally, raw goods may be imported, therefore SG_f equals SG only if the external trade balance of the food sector is 0.

$$(3) Y_f \equiv SG_f + C_f$$

The demand for food is equal to one half of the net income and the cost of the food and industrial sectors, and to five seventh of the spending of servants and day-laborers.³⁶ To this, we must add a variable that gives the net balance of external trade in food. This variable does not figure in the tables since the “state of bliss” corresponds to the case where the net balance of trade of each sectors is equal to 0.

$$(4) D_f = \frac{1}{2}(R + C_f + C_i) + \frac{5}{7}W_p + B_f, \text{ with } B_f = X_f - Y_f$$

We now use the fifth and sixth table to write the production and demand function of the industrial trade (or sector). The product of the industrial sector is equal to the sum of inputs (primary goods) PG_i and the cost of production C_i (wages, transportation, interest of the advances and entrepreneurs’ profit). The technique of production used is fixed and such that each unit of input produces 3 units of manufactured goods. The returns are constant. Primary goods may be imported and, therefore, SG_i is equal to PG only when the balance of this sector is 0.

³⁶ Butré says that they spend three fourth (75%) of their salaries on food, but the number given in “Short statement...” is slightly less: five seventh is close to 70%.

$$(5) Y_i \equiv PG_i + C_i$$

The demand for industrial good is equal to one half of the net income and the cost of the food and industrial sectors, and to two seventh of the spending of servants and day-laborers. Advances in fixed capital in the productive sector are completely spent in manufactured goods. Finally, exports and imports of industrial goods should also be included since the balance of trade may be positive (or negative).

$$(6) D_i = \frac{1}{2}(R + C_f + C_i) + \frac{2}{7}W_p + K + B_i, \text{ with } B_i = X_i - M_i$$

Butré added another relation to this set of equations: the spending in goods produced by the food and industrial sectors are always identical in the economy. Therefore, in case of a disequilibrium between the values of the goods produced by these two sectors, only the variations of the external trade in industrial goods can provide a correction so the economy stays in equilibrium, hence:

$$(7) Y_f = Y_i - B_i + B_f$$

Finally, one last equation is necessary: that of the balance of trade.

$$(8) (SG_f - SG) + (PG_f - PG) = B_i + B_f$$

A few more remarks: First, the total product of the productive sector and the structure of its costs remained identical throughout. It means that the net product is always equal to 500 in each of all the economic cases considered by Butré in the *Elémens d'oeconomie politique*. Second, because the technique of production is fixed, the output of the food and industrial sectors can be explained as a multiplier of their inputs. Hence, we can simplify the equations like this (equations (7) and (8) are not modified) to reconstruct the complete economic model of Butré.

$$(1') Y_p = SG + PG$$

$$(3') Y_f = \frac{3}{2}SG$$

$$(5') Y_i = 3PG_i$$

$$(7) Y_f = Y_i - B_i + B_f \quad \text{with } B_i = X_i - M_i \text{ et } B_f = X_f - Y_f$$

$$(8) (SG_i - SG) + (PG_f - PG) = B_i$$

V. General discussion

In the *Eléments*, Butré is not concerned with the problem of the reproduction of the economy *per se*: as mentioned above, he makes the assumption that the net product is fixed at 500 and keeps that amount throughout the whole essay. The two main issues that feature in the Tableau économique, i. e. the roles of the spending of the class of landowners and of the advances of the farmers and agricultural entrepreneurs in the creation and reproduction of wealth are thus left aside.³⁷ Butré did not really discuss neither one nor the other since in the *Eléments*, landowners' spending as well as net product are supposed constant. Butré is interested in another set of issues that have to do with the role of demand for raw goods, the size of the industrial sector and the role of external trade.³⁸

³⁷ On this aspect of the Tableau, see among others Cartelier (1991, 2002b) and Herlitz (1961, 1996).

³⁸ However, it does not mean that he considered that the productive sector was not susceptible to changes. On the contrary, his articles inserted in the *Ephémérides du citoyen* are devoted to this very question. It shows merely that in the *Eléments*, he wanted to focus on another set of issues.

The physiocrat discussed these points through both the nine economic problems that formed the third notebook (or chapter) and the seventeen tables he gave at the end of the second notebook. While it is impossible, and to some extent uninteresting, to detail all the cases considered by Butré, it is useful to go through the results of the first three problems to underline his contribution to physiocracy, and more generally to the history of political economy. In the first problem, which Butré labelled as “fundamental”, Butré calculated that the simple reproduction of his system is ensured whenever the productive sector produces twice as much subsistence goods (SG=800) than primary goods (PG=400). With this ratio, the economy reproduces itself with no external trade as one can verify with our set of equations above. It is these two necessary conditions that makes it “the fundamental ratio”: any other ratio between the two goods, SG and PG, produced by the productive sector creates a disequilibrium in the economy that can only be corrected through external trade.

This is what Butré goes on to show throughout the other “problems” he solved in the *Elémens*. Let us just consider the symmetrical cases illustrated by the problems 2 and 3, where the “the fundamental ratio” between the production of subsistence and primary goods is different from 2. In the second problem, Butré hypothesizes that the productive sector produces more than 1/3 in primary goods, while in the third problem he makes the opposite conjecture. Butré did not try to provide general solutions to these problems: he simply adds the value of 100 *livres* to equilibrium primary goods value (400) in the second problem and subtracts 100 *livres* in the third, and compute the new production values of the two sectors. In the second problem, where the productive sector produces 500 *livres* of primary goods and 700 of subsistence, the product of the food and industrial sectors, respectively 1050 and 825, are less than what they in the equilibrium situation (1200 for each). Conversely, in the third problem where the primary goods represent less than one third of the output of the productive sector, the two outputs are more than in the equilibrium situation (respectively 1350 and

1575). In each case the industrial sector reacts more than the food sector. This is due to the fact that the technique of production of the industrial sector is more efficient – compare equation (3') and (5'). Hence the economy reaches a better equilibrium (more employment) when it produces proportionally more manufactured goods that can be, for some of it, exchanged against subsistence goods. This result can be generalized as such: the more the productive sector output is composed of subsistence good, the more the total product of the two transforming sectors will be; the limit case being the one where the productive sector produces only primary goods.³⁹

This result which is not commented by Butré is very interesting. In effect, if Quesnay had in several places underlined the fact that the wealth of industrial nations was ephemeral and artificial, he was never really able (or willing) to provide a rigorous analytical demonstration of this point, notably in the *Tableau économique* (Meek 1962, pp. 282-283; Herlitz 1996, pp. 5-7 and 16). We believe Butré offered such a demonstration in the *Elémens*. He showed that an economy could, through a process of industrialization (this is our wording), increase to a very significant degree his total income.⁴⁰ In the limit case mentioned above, the value of goods produced in the industrial sector (2700) is more than doubled compared to what it produces in the state of bliss (1200) and the value of the food sector is increase by one half (1800 against 1200). Moreover, it does so without any raise in its net product or income, which depends solely on the advances made in the productive (agricultural) sector. Thus, a nation may be able to increase its population and general (monetary) wealth through industrialization, but this significant increase is more apparent

³⁹ The total production is, then, 1800 millions *livres* for the food sector and 2700 for the industrial sector with an export of 900 millions *livres* of manufactured goods and an import of the same amount of primary goods consumed by the industry.

⁴⁰ We use the word industrialization since the increase of total output and employment is based on the possibility to export manufactured goods against an equivalent value of raw materials the economy manufactures.

than real. First, because there is no increase in net product, the state is not able to raise taxes in accordance with its gross product. Hence, being unable to draw more resources from its land, it will lack funds, or see the level of its debt rocketed, in case of a war with another state. Moreover, whenever the neighbouring nations would change their policies, prohibiting for example import of industrial goods or the export of their primary goods, the fragility of the economy would be exposed and its gross product would dive. It is for this reason that Butré qualified the case with no external trade as the “*maximum de constitution*” (Butré 1767b: notebook 2, f. 3).

On the whole and besides some significant variations, Butré’s *Elémens* shared several of the traits of Quesnay’s economic system. Like Quesnay’s, his economic model has a strong normative component. For Butré, his work was to be a sort of universal toolkit each government can use to analyze its economy. He wished, for example, to analyze cases where the expenditure of the nation in industrial products and food are no more identical – similar to those explored by Quesnay with the *Tableau économique*.⁴¹ Although, there is no trace of such developments in the draft that is kept at Tours and it is probable that he never realized his initial project to its full extent, these remarks show that Butré ultimate goal was to complete Quesnay’s theory. For instance, Butré made it clear “the division of the two parts of the productive output may be subjected to an infinite number of variations that caused accordingly as many changes in the states [*états*] of manufactures and external trade. We are going to develop these aspects according to the three different ratios that can be established between raw food and primary goods and under which we can analyze the different variations.” (Butré 1767a, notebook 2, f. 3) His demonstration in the second and third

⁴¹ “The nations, which have a different ratio between their expenditures [in food and industrial goods], would form three different types of ratio in the productive sector, to which we would apply the same method that we are going to present” (Butré 1767a, notebook 2, f. 3).

problems was not intended to criticize Quesnay's theory, but to complete it in order to comfort Quesnay's statement that industrial wealth was by its nature fragile.

Finally, the text of Butré casts an interesting light on the oft-discussed issue of the sterile activities in the physiocratic system. The tables of Butré show that the food and industrial sectors produce wealth, wealth that in turn pays for the cost of production of manufactured goods, including the interest of advances and the remuneration of entrepreneurs. Interestingly, the industrial sector appears as a very 'productive' sector. Indeed, its production technique uses less input for the same gross product than in both the food sector and the productive sector. The only specificity of the productive sector is that it creates net income –an income totally disposable, i.e. not allocated to the payment of an element of the production cost. In this, Butré was completely in line with his master.⁴² However, his definition of the productive trade is different from Quesnay: not only he excludes the transportation services *de la première main*, but he also considers the activities of transforming raw food into foodstuff that can be consumed by the people as unproductive. The consequence is that one of the fundamental issue for Quesnay – the distribution of the expenditures of landowners – is secondary for Butré: whether landowners consume food or manufactures goods, they are both products of the sterile class.

⁴² For a discussion of Quesnay's view on the definition of productive activities, see Charles and Théré (2009).

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Annex

The following excerpt are taken from the second notebook or chapter of the *Elémens d'oeconomie politique*. The seven tables are given in succession on ff. 1-3 with only a short text in between the sixth and seventh tables, we kept this text as well. We have chosen to give the text exactly as it was spelled by Butré. We have added a few editorial notes and supplemented a word or two when it was an obvious miss made by the author or the text was unclear as it was. In the latter case, we have put the missing word inside brackets. We did not to reproduce or indicate the rare cancels Butré made.

The annual production of the land is 1500:

Distribution

Income ^a		500	} 1500	
} Annual advances	Food for the horses and oxen employed	130		} 700
	Food for the agricultural workers and servants	170		
	Salaries for servants	30		
	Salaries for agricultural workers	250		
	For agricultural tools	120		
Interest of advances and remuneration of agricultural entrepreneurs of all sorts and stocks of capital		300		
Total for the annual reproduction			1500	

This production of 1500 is divided in three parts

It is locally consumed in kind		
--------------------------------	--	--

^a The incomes are divided in three parts, namely the portion of the landowners, the tithe, and the tax.
[Note by the author]

for the total of	300	} 1500
Raw food bought by the nutritive class	800	
Primary goods for manufactures bought by the industrious class	400	

The food [trade] makes 1200, namely

Raw food bought from the agricultural class	800	} 1200
Cost of preparation, transports, interest of advances, remuneration of the entrepreneurs of the nutritive class	400	

Distribution of the consumption of 1200 of foodstuff

The income consumes for	250	} 600	} 1200
Day laborer and house employees ^(b)	200		
Rural entrepreneurs for	150		
The nutritive class for	200	} 600	
The industrious class for	400		
Total of annual consumption of foodstuff			1200

[2] The products of industry is 1200 namely

Primary goods of these products	400	} 1200
Cost of production in wages and transports, interest of advances, and remuneration of the entrepreneurs, About twice as much as the primary goods	800	

Distribution of the consumption of 1200 of industry products

^b The agricultural day laborers spend at least $\frac{3}{4}$ of their wages in foodstuff and the other quarter in industrial goods. The other classes of the nation bring about half of their spendings to each side. [Note by the author]

The income buy for			250	} 600
The farm	by day laborer and house employee	80	} 350	
	by entrepreneur for their agricultural advances	120		
	For the use of entrepreneurs	150		
The nutritive class for			200	} 600
The industrious class for			400	
Total of annual consumption of industrial goods				1200

This distribution determine the trade used by a nation of which the products of every types are valued at 1500

1° The property trade or [the trade] of the commodities and products of the land is 4/5 of the total of these products productions, which is in this case 1200

It is sold in raw food [*aliment*] 2/3 or 800 }
Raw materials for industry 400 } 1200

The remaining fifth of the total [value] of products is consumed in kind on the location by the landowners, farmers of all kinds, their house keepers, horses and ox necessary for cultivation works, which makes for the total of production 1500

2° The [value of] food trade is 1200, of which there is 800 of raw food domestic or imported and 400 for the preparation, transport, interest of advances, remuneration of entrepreneurs from this trade et more generally for all costs necessary for final consumption.

3° The [value] of industrial trade or of all manufactured good is 1200. There are 400 of domestic or imported primary goods, and 800 for the workers, cost of transportation, interest of advances, remuneration of entrepreneurs from this class and for all the advances necessary for the transformation of primary goods to the consumption.

Of these 1200, 800 are bought by the proprietary and foodstuff classes, and 400 by the industrial class itself and the traders attached to this class, either for their personal use or to maintain the machines and other tools necessary to their works and trades.

[3] By reuniting these three trades one can see that in a large agricultural nation where all the products of different sorts are valued 1500 there are a total trade or of annual sales ofr the use of the nation of 3600 which is distributed as such:

General trade	Property trade	Raw food		800	} 1200	
		Raw materials		400		
	Food trade	Landowner or Income buys for		250	} 1200	
		The farming for		350		
		The food class [for]		200		
		The industrious class for		400		
	Industrial trade	Landowner or Income buys for		250	} 600	} 1200
		The farming for		350		
		The food class for		200	} 600	
		The industrious class for		400		
Total of annual trade for the use of this nation					3600	