

RARENESS IN THE INTELLECTUAL ORIGINS OF WALRAS'S THEORY OF VALUE

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Historians of economic thought have carried out detailed studies of classical and marginalist approaches to value based on production cost and utility, respectively, not to mention about the fusion of both interpretations by the neoclassical school. This is not the case with rareness value, a theory commonly attributed to Léon Walras, although Aristotle surely had rareness in mind when he first attempted to explain chrematistics. This article focuses on how our understanding of rareness has evolved from the earliest economic formulations to those of Auguste and Léon Walras, contesting Murray Rothbard's thesis that there is only one way in which the transmission of the utility theory of value can be tracked from scholasticism to the Austrian school. On the contrary, the concept of rareness continued to figure in some theories of value of the French Enlightenment, especially those that emerged within Calvinist circles, and was recovered in times of reaction against the dominant classicism.

INTRODUCTION

Pre-classical tradition established that acquisition was made through production or exchange. *Raritas* and *utilitas* formed an inseparable tandem in explaining the Aristotelian problem of just price and, by extension, value generation in the

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Thomistic tradition.¹ Both concepts retained different meanings in Latin writings. *Raritas* was the quality that expressed the physical or moral limitation of a thing or an action and was different from *paucitas*, which was deprivation in quantitative terms. *Utilitas*, initially understood as a concrete and not comparable quality, expressed the aptness or suitability of a thing or action to satisfy an objective physical need (*virtuositas*) or a subjective desire (*complacibilitas*, *commoditas*). The analysis of commutative justice, recognized as an inherent fact of life in society, underwent a double revision between the late scholasticism of the sixteenth century and the Enlightenment. First, counter-reformist intellectuals reconsidered the principle of *summum bonum* as an object of reflection in Catholic moral philosophy compatible with natural theology. In the Protestant context, influenced by the nascent Scientific Revolution, the empirical and sensory observation of nature was instead adopted to approach social subjects. The second revision was associated with the formation of nation-states and the construction of their respective civil and international law codes (*ius civilis*, *ius gentium*), consistent with different positive interpretations of natural law (*ius naturalis*).

Max Weber ([1904–05] 1992) hypothesized a close relationship between religion and economics, particularly in the seventeenth century. Since then, many works have delved into the ways that different religious conceptions of nature and society affect economic thought (Nelson 1991). The conditioning of value theories to theological precepts was considered from a Weberian perspective by Emil Kauder (1953, 1955, 1965) and contested by Murray N. Rothbard (1995, pp. 140–143; 2011, pp. 26–29, 139–160). Kauder dated even earlier the scholastic reminiscences of a subjective utility theory of value, from Gian Francesco Lottini to Bernardo Davanzati, and detected the latter’s influence in the writings of Ferdinando Galiani, Anne Robert Jacques Turgot, and Étienne Bonnot de Condillac. While utility continued to figure in the Catholic explanation of value, which included work as a necessary sacrifice for attaining Aristotelian “moderate happiness,” this was not the case in Presbyterian Scotland, where the precept on the perseverance of the saints imposed an objective labor theory of value in accordance with the virtues of personal effort, frugality, and parsimony. Kauder concluded that the Thomistic utility theory of value persisted in Austrian Catholic marginalism but was lost in Léon Walras’s mathematical interpretation.

Rothbard cautiously accepted this statement from Kauder but rejected the previous ones. Capitalism, as his teacher Ludwig von Mises had explained, was born in the Catholic Italian city-states of the fourteenth century and developed in Antwerp and

¹ “And that which is scarcer is a greater good than that which is abundant, as gold than iron, although it is less useful, but the possession of it is more valuable, since it is more difficult of acquisition. From another point of view, that which is abundant is to be preferred to that which is scarce, because the use of it is greater, for ‘often’ exceeds ‘seldom’; whence the saying: water is best. And, speaking generally, that which is more difficult is preferable to that which is easier of attainment, for it is scarcer; but from another point of view that which is easier is preferable to that which is more difficult; for its nature is as we wish” (Aristotle 1926, bk. I, ch. VII, pp. 75–77). Note that the English translator chose to use *scarcity* for *σπανιότερον* (in Latin, *raritas*). William of Moerbeke translated the *Rhetoric* from Greek to Latin for the first time in the mid-twelfth century. This was the version familiar to Thomas Aquinas and led to the famous paradox of water and diamonds, disseminated and noted by Nicolaus Copernicus, Samuel Pufendorf, John Locke, Adam Smith, and Carl Menger.

southern Germany. Calvinism adopted it but did not create it. In addition, cases such as physiocracy or the subsequent spread of the classic dogma of labor value in Catholic France would resist Kauder's interpretation. For Rothbard, only the Mengerian utility theory of imputation could be traced back to the scholasticism of Salamanca and apparently retained its Aristotelian purity.² But what about the *raritas*? Following Kauder perhaps too closely, Rothbard identified rareness with physical scarcity—the Latin *paucitas*—and associated it with the cost of production.³ It is not our intention over the following pages to discuss the persistence of Thomistic arguments in the reasoning of the Austrian school. Instead, this article aims to demonstrate that there was an alternative theory of value that has barely been explored. The attribution of value to rareness was not the exclusive heritage of the genealogy from Catholic thinkers to marginalism but was also present in Protestant circles. We present evidence to prove that *raritas* survived along with *utilitas* in Huguenot theories of value until both concepts were fused together in Walrasian utilitarianism. In other words, Aristotle's economic ideas also traveled through channels other than those tracked by Murray Rothbard.

Although it is not the object of the present study to deal with the labor theory of value, the intuition to link *scarcity* with an exchange theory of value based on production cost as opposed to usage value is as tempting as it is potentially misleading. The cost of production value was already present in works by Duns Scotus and John Mair (Gómez Camacho 1998, p. 147). It is likely that these forerunners paved the way for Gershom Carmichael to disseminate with *De officio* his theory of value in the Scottish historical school of moral philosophy until it was perfected with Adam Smith and transmitted in various forms in the classical tradition. But this hypothesis is as inaccurate as any generalization, especially when referring to Jean-Baptiste Say and the French *idéologues*. Caution regarding this assumption would be greater when considering the value theories of Nassau Senior, Thomas Tooke, William Lloyd, Mountifort Longfield, or Richard Jennings, among other British “classics” for whom utility was relevant in determining value, and even more so when considering that of Thomas De Quincey, in which utility played an essential role. Although, for reasons as different as they are well known, the notion of *rarity* that David Ricardo attributed to non-reproducible goods would also be an exception.⁴ This reflection should serve to underline that the translation of the noun *raritas* into modern European languages is not a minor etymological question, since it influenced different constructions of the notion of value. *Rarità* is

² As Rothbard (1995, pp. x–xi) himself observed, “The scholastics may be considered ‘proto-Austrians’, with a sophisticated subjective utility theory of value and price.... Moreover, in ‘macro’, the scholastics, beginning with Buridan and culminating in the sixteenth-century Spanish scholastics, worked out an ‘Austrian’ rather than monetarist supply and demand theory of money and prices.” Furthermore, the Spanish originality in constructing a theory of just price to understand quantitativism has recently been contested by Anton A. Afanasyev (2016), who connects Martín de Azpilcueta's *Manual* (1556) and *Enchiridion* (1579) to the earlier *Manual de Confessores e Penitentes* (1549) by the Portuguese friar Rodrigo do Porto.

³ Rothbard always used the term *scarcity* to refer to *raritas* (2011, pp. 141, 151, 153–155).

⁴ Goods are rare in the Ricardian sense if they cannot be increased by labor, i.e. statues, paintings, books and medals, quality wines, etc. Their value depends only on “the faculties, tastes and whims.” According to Auguste Walras (1831, p. 109), “David Ricardo divides all commodities into two classes: those that are rare, and those that are not.... This opposition is inadmissible in the language of science, for which abundance and *rareté* are one and the same phenomenon” (our translation).

not synonymous with physical scarcity in Galiani's work, and neither would it be in a francophone tradition that starts with Jean Barbeyrac and evolves in meaning until the *Éléments d'économie politique pure* by Léon Walras.

The article is structured as follows. **Section II** traces the evolution of the concept of *raritas* and the difficulties that translation of Latin implied in pre-Enlightened Europe. **Section III** analyzes the reception in the times of physiocracy of the idea of rarity and the analytical constructions that were derived from it. **Section IV** exposes the synthesis carried out by Auguste Walras and, finally, the analytical culmination of the notion of rarity carried out by his son Léon through infinitesimal calculus. **Section V** provides some concluding remarks, summarizing the intellectual journey described in the article and highlighting its importance within the historiography of value theories.

II. THE CALVINIST ORIGINS OF THE RARENESS THEORY OF VALUE IN LAUSANNE

Rothbard's (2011) resurrected dispute with Kauder failed to contemplate the spread of economic ideas as a key element in understanding the problems inherent to their evolution. The dissemination of legal and economic Latin terminology and its translation into vernacular languages, essential for the *ius civilis et gentium* to be possible, greatly affected the understanding of *raritas*. Samuel Pufendorf's *De jure naturae et gentium* (1672), along with its summary *De officio hominis et civis juxta legem naturalem* (1673), was a crucial milestone in the spread of civil and international law from Heidelberg and Lund and the subsequent construction of different theories of value based on rareness and utility. Its importance lies less in its originality—its debt to Hugo Grotius's *De jure belli ac pacis* is well known—than in its malleability for teaching. Both texts circulated in many cultural and intellectual fields. They were translated and published in annotated editions as varied as those of Barbeyrac and Jean-Jacques Burlamaqui in Calvinist Switzerland, Heineccius in the Bavarian Catholic Enlightenment (*Elementa Juris Naturae et Gentium*, [1737] 1776), Gregorio Mayans as representative of Spanish Catholic eclecticism (“Filosofía cristiana. Apuntamientos para ella,” manuscript c. 1747), George Carew's Anglican version (*Of the Law of Nature and Nations.... Written in Latin by the Baron Pufendorf.... To Which Are Added All the Large Notes of Mr. Barbeyrac ...*, 1728), and Gershom Carmichael in Presbyterian Scotland (*S. Pufendorfii De officio*, [1718] 1769).⁵ In the case of the latter, Pufendorf's theory of value—expressed in Chapter XIV in terms of utility, *raritas*, and difficulty of acquisition—appeared in the second volume of Francis Hutcheson's *A System of Moral Philosophy* ([1755] 2007) with a notable peculiarity: the indiscriminate

⁵ It is surprising that Barbeyrac and Burlamaqui were not cited in Rothbard's (1995) extensive volume on the history of economic thought before Smith, especially considering that he devoted two chapters to the Calvinist Huguenots and their associates and *politiques* (5.9 and 5.11). As for Heineccius, the acquisition of goods and property were dealt with in chapters X and XI, and contractual relationships in chapters XIV and XV. Arild Sæther (2017, ch. VI) has made a detailed study of the spread of Pufendorf's economic and legal ideas in the Scottish Historical School.

translation of the term *raritas* by “rarity” or “scarcity.”⁶ Indeed, *raritas* has proven to be a particularly sensitive concept, lending itself to semantic variations that have become fixed over time as new meanings in dictionaries. Auguste and Léon Walras argued that French writers had generally misunderstood *rareté* to be an antonym of abundance. If this were accepted, rareness would be a lack in the endowment of a good or production factor in an economy. But *rareté*, they said, is not a specific quantity within a scale of magnitudes but rather a scale, a “philosophical” or “scientific” quality. Rareness is a ratio between utility and limited endowment, but its vulgarization has led to an understanding of it as something that is rare, that has a very limited endowment or is curious but not very useful, that is strange insofar as our habitual uses are concerned and infrequently subject to exchange. The distinction between rareness as a quality and as a quantity has significant analytical consequences. As a quality, this distinction leads to its mathematization as a monotonous and continuous function, but as a specific quantity it does not. Understanding rareness as a ratio poses another problem: if utility is a prerequisite and necessary to rareness, there will be a positive functional correlation between *raritas* and *utilitas*, which are essentially different terms in the economic literature up to the Enlightenment. Rareness—or, interchangeably, utility—ceases to be a component of value and becomes its determinant if the limited endowment is constant. It would have been more accurate to use the noun *rareness*, which expresses a quality. Indeed, the term *scarcity* has since come to be understood as a shortage.

The Edict of Fontainebleau (1685) forced the Barbeyrac family to flee the repression against the Huguenot Calvinists in their native France. After journeying through Geneva, Frankfurt, Berlin, and Amsterdam, the young Jean Barbeyrac settled in Lausanne in 1711. By then he had published *Le droit de la nature et des gens* (1706) and *Les devoirs de l’homme, et du citoyen* (1707), the earliest French translations of Pufendorf’s *De jure* and *De officio*. Both of these closely followed the original text and formed the basis of Carmichael’s vindication of the German author in *S. Pufendorfii De officio* [1718] 1769). Chapter 1, Book V, and Chapter 14, Book I, respectively, dealt with the issue of value. According to Barbeyrac’s annotations, rareness is of greater importance in determining value than Pufendorf had thought. Goods that can be priced must not only have a use: they need the approval of the people and must also be insufficient to satisfy everyone’s needs. Then, a thing is more useful the rarer it is (Barbeyrac 1706, vol. II, bk. V, ch. 1, p.2nIV.1).

Utility is not the only requirement needed for something to be considered a good. It is also essential that it exists in a smaller amount than that for which there is demand. This idea was taken up by the Swiss lawyer Jean-Jacques Burlamaqui (1694–1748). He studied at the Academy of Geneva the two French translations of Barbeyrac, whom he met in person in Groningen in 1721. His reflections on natural law were published in 1747, shortly before his death. The expanded edition of Burlamaqui’s *Principes* (1747) by André-Marie-Jean-Jacques Dupin (Burlamaqui 1820) proves that his lessons on *ius gentium*, taught at the same academy between 1723 and 1740, were collected in unpublished notes made between 1740 and 1748. There are two main reasons why this work is of interest. First, it is a critical adaptation in French of

⁶ Hutchison (1988, pp. 192–193). Rothbard (1995, p. 461) cited only Pufendorf as a forerunner of Carmichael and did not notice that, according to the subtitle of his book, Carmichael was refuting Barbeyrac.

the works of Pufendorf, Grotius, and Barbeyrac; and second, it combined scholastic reasoning about just price with a theory of value that emphasized the decisive role of *rareté*.

Burlamaqui's (1820, ch. XI, part 4) "On the price of things and shares that enter into trade" is illuminating.⁷ Burlamaqui literally followed Barbeyrac in distinguishing between *virtual* prices⁸ and *intrinsic* or *own* prices. Virtual prices were divided into *legitimate* prices, which were set by the monarch or the judicature for those goods needed for consumption, and *conventional* prices, which resulted from the free agreement between seller and buyer as long as they "did not stray too far from the fair estimate."⁹ Transport and storage costs, credit, retail, and competition between buyers or sellers were the only reasons that would justify such deviation (Burlamaqui 1820, pp. 236–238).

Conversely, the intrinsic value is "inherent to things ... as they are more or less apt to serve our needs, our comforts or our pleasures" (Burlamaqui 1820, p. 231). Only those "goods or acts" that are limited in quantity, appropriable, and marketable acquire value and an intrinsic price, if they meet the above condition. However:

Mere utility, whatever it is, is not enough for things to get a price; it is also necessary that such utility is accompanied by *rareté*; that is, that these things are of such a nature that no one can procure them easily and in the amount they want. In fact, the most useful and even the most necessary things, if they are so abundant that their use is inexhaustible, are not appreciated, as we see for example with ordinary water. However, *rareté* alone, no matter how great it is, is not enough to confer prices on things. ... In short, all circumstances which contribute to lowering the prices of things ultimately report to *rareté*. (Burlamaqui 1820, pp. 232–233; our translation)

Thus, the intrinsic value corresponds to the scholastic "just estimate" and conventional prices deviate from it only for natural and non-arbitrary reasons, except in the case of necessary goods. It is more important to understand utility and coercibility as prerequisites of an intrinsic value that depends on *rareté*. The rareness of a good, understood as a variable endowment, presupposes utility and appropriateness in limited quantities and is thus found to be the ultimate determinant of value.

Burlamaqui made great progress in understanding that rareness and utility were not two conditions that had to be satisfied simultaneously to generate value but that the one implied the other. Property right is prior to the act of exchange. This conception of *rareté* will prove that this Genevan author was a definite forerunner of the theory of value proposed by Auguste Walras in 1831. However, it is difficult to track Burlamaqui among the economic writers of the Enlightenment. Although the *Principes du droit naturel* was regularly reprinted and translated into six languages for the training of jurists, its actual influence has become intertwined with the theories of value that would be developed in France a few years later. But this does not mean that its principles were unanimously

⁷ This work by Burlamaqui has not been translated into English. The translation of the original French text is therefore our own.

⁸ *Premium vulgare* in Pufendorf's version. Like Barbeyrac, Burlamaqui translated this as "*virtuel ou éminent*" (Barbeyrac 1706, vol. II, bk. V, ch. 1, p. 2nIII.1).

⁹ The meaning is identical to the scholastic *legal* prices (Gómez Camacho 1998, pp. 143–144). It reproduces Aristotle's definition of necessary chrematistics, espoused by Thomas Aquinas in *Summa Theologiae*.

rejected. The ultimate reason for its limited influence on Enlightened economic thinking lies in its lack of content on the *ius gentium* in its early editions. The Yverdon compilation of Burlamaqui texts by Fortuné-Barthélemy de Félice (1766–1768) permanently introduced the chapter on exchange, but this went unnoticed—due to its unimportance or inappropriateness—at the height of the debate between supporters and detractors of physiocracy. The posthumous edition of *Éléments du droit naturel* in 1775 was apparently the one that reached the public. This third Lausanne version was in fact that used by both Auguste and Léon Walras.¹⁰ Burlamaqui’s rareness theory of value would spread later with the Parisian edition of Dupin of 1820, at the height of classical enthusiasm, in opposition to Ricardian ideas on capital-labor value. However, at that time there were few who understood it. The Spanish translation of the *Éléments* by Burlamaqui, Jean-Jacques (1825) is an irrefutable proof of this fact.

III. RARETÉ IN THE ANTIPHYSIOCRATIC THEORIES OF VALUE

Gilbert Faccarello and Philippe Steiner (2008, 2021) have recently stated the distinction between “*commerce politique*” and “*philosophie économique*” to better understand the evolution of theoretical economic debates since the radical Enlightenment, in the final decades of the seventeenth century, to the French Restoration (1830). The “*philosophes économiques*” developed a sensationist theory of knowledge to bring a new view on the influence of self-interest in the efficient action of the legislator and the defense of free trade and competition. This conception of self-interest, essential to understand exchange and value, evolved from Pierre Le Pesant de Boisguilbert’s religious individualistic definition to utilitarianism in the works of François Quesnay and the physiocrats, and others such as Turgot, Jean-Joseph-Louis Graslin, Condillac, Nicolas de Condorcet and the *Idéologues*, and Say. Conversely, the “*commerce politique*” was the French adaptation of the British “science of trade,” established from William Petty’s political arithmetic and adopted by Jean-François Melon, Nicolas Dutot, Montesquieu, Ferdinando Galiani, and especially the circle of Vincent de Gournay—François Véron Duverger de Forbonnais, Claude-Jacques Herbert, Louis-Joseph Plumart d’Angeul, among others (Demals and Faccarello 2016). We argue that Achille-Nicolas Isnard should be added to this list. The following pages will show that the theory of value based on rarity was transmitted from the francophone Huguenot tradition to the most eminent writers of the “*commerce politique*.”

Not even a decade had passed since the first edition of Burlamaqui’s *Principes* before the French Court was dazzled by physiocracy. The debate over the existence of a physiocratic theory of value has advanced since it was rejected (Napoleoni 1981) and deemed inconsistent (Hutchison 1988) or imperfect (Eltis 1995) to the point to recognize its buried coherence (Vaggi 1987; Steiner 1998) and pragmatic reductionism (van den Berg 2006). Quesnay’s *Maximes générales* contrasted two notions of value: a subjective one (*usuelle*) referring to the physical properties that qualitatively differentiate some goods from others, and an objective one (*d’échange*) that allows quantitative comparisons. Individuals in society produce in order to exchange, so subjective utility

¹⁰ The Genevan edition of *Principes du droit politique* (1751) by Vernet is not usually counted.

was irrelevant in the circulation of the *Tableau Économique*. The objective value would determine the fundamental price, while the market price would depend on the net product, competition between buyers and sellers, and commercial opportunities.

Rareté barely appeared in the discourse of the *économistes*. Guillaume-François Le Trosne ([1777] 1846, ch. 1, pp. 887–903) introduced it in his discussion of value to refute Condillac's arguments. However, it did gain the attention of its detractors, from Galiani and Forbonnais to Achille Isnard, thus giving continuity to the history of *rareté* on the margins of mainstream political economy. The freedom in the grain trade ordained by Turgot in 1774 reflected his own theory of value that combined both the utility, conferred by market participants, and the scarcity of the goods to be traded. Along similar lines, Ferdinando Galiani (1751, 1770) also developed a theory of value (Giocoli 1999). According to him, however, the cost of production must be understood as the difficulty of the work carried out (*fatica*, in Neapolitan dialect), and the value is given by the utility that we assign to this effort, which is therefore weighted by the valuation of each individual. Thus, contrary to how it may appear *a priori*, Galiani's theory is purely based on utility.

Forbonnais (1767) attacked the *Tableau* at its most vulnerable point: the flimsy theory of value that underpinned exchanges between landowners, tenants (*fermiers*), and the “sterile class” of artisans and merchants. He first explained the “simple circulation” of agricultural surplus in a barter economy and then addressed the more complex “compound circulation” involving currency and credit transactions.¹¹ The tenants consume only a part of their production (*revenu primitif*) in order to cover their first- and second-order needs—subsistence and annual advances—and deliver the surplus to the landowner, who exchanges it or sells it for goods that satisfy higher order needs (*revenus secondaires*).¹² The comparison of surpluses in the exchange depends on four relationships: (1) those involved in the *rareté naturelle*, (2) that between consumption demand and production, (3) that between profit—conditioned by competition between distributors—and the total intermediate storage and transport costs, and (4) that between the advisability of the loan and the swiftness of the exchange (Forbonnais 1767, vol. IV, ch. 3, pp. 36–49).¹³ The inclusion of the last two relationships determines a current value above the intrinsic, which depends on the first two. This arrangement of the explanatory factors for prices is identical to that of Barbeyrac and Burlamaqui, although Forbonnais presented it in a more systematic way.

In turn, the consumption/production relationship was a device of Galiani's, although Forbonnais was also inspired by Cantillon ([1757] 1997) to add land and labor (Forbonnais 1767, vol. IV, ch. 6, pp. 75–102). The *rareté naturelle* of crops results from natural causes and the relationship between the demand for consumption and the production surplus, obtained from agricultural work. Nominal wages return to

¹¹ Both mathematical models of circulation are described in Cervera (2006).

¹² Forbonnais detailed only the first order of needs: food, raw materials, iron, and firewood. The second order would correspond to the instruments of primary production, the third to drapery and crafts, the fourth to levels of comfort, and the fifth to luxury. The orders of necessity determine the corresponding orders of production and consumption. Obviously any resemblance to the orders in the Austrian School theory of imputation is nil.

¹³ *Rareté naturelle* is a synonym for *profit*; and the literal translation would be *profit over revenu primitif*. Forbonnais conditioned the *rareté naturelle* of the harvest to incidental expenses comparable to Galiani's natural agents.

subsistence level, but the population grows at a constant rate. In short, when the surplus is absorbed by an increase in agricultural population, the wheat exchange values estimated by Galiani and Forbonnais coincide. Under this condition, a surplus caused by natural agents is the only determinant of the variation in the exchange value of wheat and its effect is only temporary. Forbonnais's theory of value combines limited endowment due to natural causes—Galiani's "providence"—with a relationship between constant subsistence needs and endowments that depends on labor. Utilities are treated as necessities, like subsistence consumption, that grow in proportion to the population. They disappear from the analysis when they do not provide a more detailed explanation of the higher orders of consumption, though this detailed explanation would be unnecessary as the subject under discussion is the *Tableau Économique*.

Richard van den Berg (2002, pp. 303–305) found in Graslin's *Essai Analytique sur la Richesse*, published in the same year as Forbonnais's *Principes*, a cumbersome though "novel psychological theory of value" to support the criticism of physiocracy. Such a perspective prevented any mathematical approach to the *Tableau*. Graslin was not so innovative in Part I, Chapter 2, where he reinterpreted its components in the scholastic tradition to discuss a new problem: the idea that "abundance and famine" determined the *bon prix* of wheat. His starting point was Quesnay's reasoning, according to which each good has an objective value corresponding to an unalterable order of needs, from natural (*besoins naturels*) to fictitious (*factices*). The *relation de l'espèce* (Graslin [1767] 1911, p. 27)—the ratio of absolute values between each pair of goods—is constant. The sum of all needs or "mass of wealth" is also given. When new goods appear in the market, they occupy the positions of the least necessary. Old goods transfer part of their usefulness without altering the order or type of relationships and in turn create new ones. Prices would be set outside the utility comparison and would depend on the relative *rareté*, understood simply as a comparison of quantities, which in turn would depend on competition between buyers. A good wheat crop sees its relative value reduced compared with other goods, for instance manufactured ones. As these are rarer—relatively less abundant, in Cantillon's sense—they will become more expensive. The abundance of wheat will not be accompanied by grain shortage but by a dearth of manufactured goods, although wheat is still more necessary than this kind of commodities, thus stimulating manufacture producers at the expense of agriculture.

Just two years after publication of the *Essai analytique*, Turgot saw the risks inherent in the interpretation of Graslin's "doctrine of constant and unique value, always expressed by the unit, and in relation to which all particular values are only proportional parts" (Turgot 1769, pp. 1–3). He was right: the cracks in Graslin's reasoning widen as his text progresses. The first is the disconnect between absolute and relative values. Only a year later a rearguard physiocrat like Abeille (1768) would resolve the relationship between *non-valeur*, fundamental and market prices, neutralizing Graslin's attack. Another flaw is the substitution of subjective utility by an objective gradation of needs, while the third and most serious is the ambiguous use of the term *rareté* as an amount meaning the opposite of abundance. Graslin's confusion also affected Étienne Bonnot de Condillac. The abbot of Condillac (1776, pt. I, chs. 1–3, pp. 1–30) originally introduced subjectivity into the appreciation of the physiocratic *année commune*, an expression that meant that an annual crop was rated as being enough to meet the population's wheat needs, the amount and price range of which were known from experience gained over previous years. He distinguished

between years of hunger (*disette* or *rareté*) (Condillac 1776, pt. I, ch. 11, pp. 84–91), abundance—equivalent to a sufficient surplus formed to offset the fear of famine in the following years—and overabundance, in which a part of the surplus is left over for exports. The amount of these crops could not be specified due to the psychological component of fear of an insufficient supply. Following Graslin, he classified the needs as natural, to cover subsistence and maintain social order, or fictitious, for comfort. The natural need was also subjective, imperceptible in years of overabundance and evident in years of famine. Wheat utility would therefore have two correlated subjective components: the estimation of the crop and the urgency of the need. The relative price of a good would be established in the individual exchange by the comparison of total utilities.

Incorporated labor would be the means to obtain what was necessary for both self-consumption and barter and would ultimately determine the exchange value of a good (Condillac 1776, pt. I, chs. 15–16, pp. 120–146). But if the necessary is subjective, depending on “opinion,” how can we objectively know the relationship between labor, relative value, and price? Condillac did not provide an answer because his logic led to a dead end.¹⁴ His was a *subjective* labor theory of value and nothing to do with what Adam Smith (1776) proposed that very same year in Book I of *The Wealth of Nations*. From this perspective, Condillac’s furious attack against the defenders of *rareté* as a reason for courage is more understandable:

Those whom I fight see it as a great contempt to base the value on utility, and say that a thing cannot have worth unless it has a certain degree of rarity. *A certain degree of rarity!* This is what I cannot understand. I conceive that a thing is rare when we judge that we do not have as much as we need, and that it is overabundant when we judge that we have more than we need. ... But we are forced to contemplate value as an absolute quality, which is inherent to things regardless of the judgments we form, and this confused notion is a source of bad reasoning. (Condillac 1776, pt. I, chs. 17–18, pp. 146–196; our translation, italics in the original)

“This is what I do not understand,” said Condillac. Rareness reduced to *disette* was set next to *besoin* as a subjective component of utility and without meaning as an absolute quality; and in turn, the usefulness of wheat subjected to opinion modified rareness. These arguments were not confined to *Le Commerce* but are easily recognizable in Jean-Baptiste Say’s *Traité d’économie politique*, where rareness already appears as a synonym for the cost of production, and in the works of his most faithful followers.¹⁵

Nevertheless, *rareté* retained its original meaning in a work that was less widely known but significantly recognized as part of the configuration of the Walrasian theoretical scheme. The *Traité des richesses* by Parisian bridge and road engineer Achille Isnard came from the very same printing house as Félice’s *Principes*, in

¹⁴ Let L_1 and L_2 be the labor carried out by individuals 1 and 2, respectively. It is intended that $L_1(a) = f_1[U_1(a)]$ and that $L_2(b) = f_2[U_2(b)]$, but nothing can be concluded either from $U_2(a)$ or from $U_1(b)$.

¹⁵ Say explained the foundations on value in the revised editions of the *Traité d’économie politique*, Book II, Chapter I (Say 1803, bk. II, ch. 1). *Rareté* disappears even in those chapters in which he assesses the texts of his proselytes (see, for instance, Destutt de Tracy 1823, chs. II–III, pp. 81–88). See also Say ([1828] 1996, pp. 97–134).

Lausanne.¹⁶ It is a genealogical link that is difficult to connect with the works of Forbonnais¹⁷ or with Graslin's *Essai*, using the way given in the *Traité* (Isnard 1781, vol. I, p. 172). His criticism of physiocracy is late and neither his methodology nor many of his conclusions coincide with those of Gournay's group. The structure of Book I is also atypical, presenting a theory of exchange before the theory of value. Isnard is usually included among those authors who anticipated marginalism, such as Daniel Bernoulli, Claude-François-Joseph d'Auxiron, and later Antoine Augustin Cournot and Jules Dupuit, unclassifiable in the mainstream schools. However, the notion of value that Isnard presented is perfectly recognizable, preserving in mathematical form the same philosophical meaning that Burlamaqui gave *rareté*.

Louis Renevier was the first to identify the analogies in the theories of exchange of Isnard and Léon Walras in his doctoral thesis of 1909, when the fact that the latter had quoted the former in a letter to Jevons was still unknown. His thesis director, Auguste Dubois, had investigated the psychological theories of value between the Middle Ages and the Enlightenment. Since that first approach, the comparison has been redirected towards its algebraic reasoning (Teocharis 1961), passing through the critical testing of its systems of equations (Jaffé [1969] 1983; Klotz 1994) to the methodical graphic reconstruction of Isnard's non-physiocratic *Tableau* (van den Berg 2002). The main similarities pointed out by Jaffé were the exchange equation $aM = bM'$ ¹⁸ and the use of a commodity as a baseline to simplify the multi-equation model. Nevertheless, it cannot be ruled out that both authors raised similar hypotheses at different times using simple logic. Jaffé also noted an important difference: Isnard took fixed amounts of each good exchanged, while Walras considered only constant allocations and modified the quantities exchanged for each endowment based on relative prices.

Isnard turned to Forbonnais to dismantle the mechanics of the *Tableau*, outlining an alternative and pioneering system of general equilibrium. He presented the theory of merchandise exchange in Book I (Isnard 1781, pt. I, bk. II, chs. 1–3, pp. 51–142). Contrary to what the *économistes* believed, labor gives production useful qualities that transform it into wealth. When an individual produces more useful goods than necessary for his own consumption, they are intended as merchandise. If there are, respectively, two surpluses a and b of two different goods of measures M and M' , then $aM = bM'$ and therefore $M/M' = b/a$. The relative value of each measure of merchandise is

¹⁶ The excellent biography of Isnard by R. van den Berg (2006) also shows that he worked in Évreux, Walras's place of birth. Isnard's Calvinist beliefs cannot be proven, but his documented criticisms of the papacy, the "spiritual theocracy on Earth" of the Catholic hierarchy, and the regular clergy are explicit and point in that direction (Isnard 1781, vol. I, p. 253; vol. II, pp. 234–235, 237). In the *Catéchisme Social* (Isnard 1784, p. 2n[a]), Isnard identifies his beliefs with "universal moral rules" rather than with Christian dogmas.

¹⁷ Forbonnais is the second most cited author after Montesquieu (Isnard 1781, vol. I, pp. 98, 144, 161, 166, 170, 192, 221, 250–253, 298–299; vol. II, pp. 3, 19). Isnard made virtually no concessions: he was opposed to Montesquieu's belief that a surplus of food meant depopulation, an idea shared with Galiani and, as we have seen, relevant to his understanding of value. He also found fault with his arguments about foreign trade and colonies, luxury and incentives for the domestic consumption of manufactured goods, the speed at which money circulated, and the fiscal model. Isnard noted that he had read the most outstanding works of Forbonnais (*Éléments du commerce*, *Recherches et considérations sur les finances de la France*, *Considérations sur les finances de l'Espagne*) except for the *Principes*, which is precisely where he explained his theory of value.

¹⁸ $mv_a = nv_b$ in Walras's *Éléments* (1874, sec. II, lesson 10, prop. 50).

established in inverse proportion to the amount devoted to exchange. In the case of a multiple exchange, the measure of one commodity would serve as a baseline for the others. The amounts exchanged depend on their surplus and that of the goods with which they maintain “utility or homogeneity relations,” either complementary or substitute (Isnard 1781, pt. I, bk. I, ch. 4, pp. 27–28). The ratio b/a expresses a relative *rareté* that presupposes the utility of both goods and determines the value of exchange.

According to Isnard, “the value of a commodity is at least equal to its production costs” (Isnard 1781, pt. I, bk. I, ch. 6, pp. 35–36). Relative *rareté* is an exchange value that is necessarily higher than the relative costs of the raw materials, land, labor, and advances, in a proportion that will ultimately depend on the relative utilities of the goods compared. In turn, relative utilities are a function of the qualities incorporated into each good through work. But how can we know the individual value of each good? Isnard provides an answer distinguishing between limited and offered quantities:

When the quantity of a good increases for whatever reason, or when its value decreases for the same reason, if the supplies remain constant, or if they increase because less wealthy consumers away from the famine are attracted by the decrease in price and abundance; in this second case, the price does not decrease due to the increase in quantity. When the quantity of a good decreases, the opposite occurs.... The value of a good is equal to the sum of its supplies divided by the quantity. (Isnard 1781, pt. I, bk. I, ch. 7, p. 43; our translation)

It follows that the value of a particular good would be a quotient between its effective supply and its limited quantity or endowment.

IV. FROM AUGUSTE TO LÉON WALRAS: RARENESS AS MARGINAL UTILITY

In *De la nature de la richesse et de l'origine de la valeur* (1831), Antoine-Auguste Walras recovered the notion of *rareté* from the Lausanne tradition, from Barbeyrac to Isnard, with the aim of amending the value interpretations of utility that Condillac introduced into the developments of the last generation of *philosophes économiques*—Say, Germain Garnier, Antoine Destutt de Tracy, Charles Ganilh, Jean Charles Léonard Sismonde de Sismondi, and Nicolas Massias¹⁹—and to refute the arguments about the

¹⁹ “On a souvent placé l'utilité dans l'origine de la valeur ou de la richesse proprement dite. Cette opinion a envahi presque tous les traités d'économie politique publiés en France, depuis le commencement de ce siècle” (A. Walras 1831, p. 98). A. Walras considered the following works from a critical perspective: the third editions of the *Traité d'économie politique* (Say [1803] 1826) and the *Catéchisme d'économie politique* (Say [1815] 1881); the translation of *The Wealth of Nations* by Germain Garnier (Smith 1802); the stand-alone edition of the *Traité d'économie politique* from the *Éléments d'idéologie* by Destutt de Tracy (1823); the *Théorie d'économie politique* (Ganilh [1815] 1822) and the *Dictionnaire analytique d'économie politique* (Ganilh 1826); the second edition of the *Nouveaux principes d'économie politique* (Sismondi [1819] 1827); and the lesser known *Rapport de la nature à l'homme* (Massias 1821) and the *Traité de philosophie psychophysique* (Massias 1830).

cost of production value present in the classical works of Smith, Ricardo, James Mill, and John McCulloch.²⁰ He recognized his debt by confessing that “the doctrine I just presented to my readers ... is so little original, so little modern, that it was already present in the *Éléments du droit naturel*, by Burlamaqui” (A. Walras 1831, pp. 124–125; our translation). This was a debt that his son Léon would take on in his *Éléments d'économie politique pure*:

There are, in this science, three main solutions to the problem of the origin of value. The first one is that of Smith.... The second one is that of Condillac and J. B. Say.... Lastly, the third one, which is the right one, is that of Burlamaqui and my father, A.-A. Walras, because it places the origin of value in rareness. (L. Walras 1874, sec. II, lesson 27, prop. 155; our translation)²¹

The value of an object, Auguste Walras explained, lies in its capacity to represent another of a different nature. The act of valuing implies comparison and willingness to exchange. Individuals do not value that portion of their production intended for self-consumption but only that part that they are willing to sacrifice to meet other needs. They supply what they know will be useful to others and demand what they themselves will find worthwhile. Usefulness is therefore inherent to the valuation of any “good,” as the etymology of the word indicates. According to Auguste Walras, Say and his school would have misunderstood utility as being a cause of value. They did not realize that value presupposes utility. One can exchange what is left over or even what is needed for something urgently required, but of course nothing useless or harmful is exchanged. Following this approach, the separation between use and exchange values, between the source and the measurement of the value, would lack foundation (A. Walras 1831, p. 128). Utility cannot be the cause or the measure of value because it is not directly related with prices: “Everything that can be said in favor of utility is that it sometimes exerts an influence on rareness and, thus, on its corollary, value” (A. Walras 1831, pp. 92–93; our translation).

Utility can exist in both “unlimited” and “limited” goods. However, only rare goods—those that are useful and limited in quantity and duration—acquire value. The air we breathe, available in nature in an amount greater than that needed to satisfy all its utilities, is worthless. Say made his analysis more sophisticated by distinguishing between intangible utilities, of immediate enjoyment, and material utilities, of long duration. Auguste Walras discussed this classification, prefigured by Galiani, to define income (*revenus*), which is consumed the first time it is used, and capital, which is preserved for some time to provide successive production services (A. Walras 1831, p. 33). Léon Walras would assume this to be true in Lesson 17 of his *Éléments d'économie politique pure*.²²

²⁰ “D’où vient la valeur du travail? Pourquoi le travail a-t-il une valeur? Il suffit d’y réfléchir un moment pour se convaincre que le travail ne vaut que par sa rareté.... Si un castor et un daim valent quelque chose, c’est uniquement parce qu’ils sont rares. Si un jour, une heure de travail, ont une valeur, c’est aussi parce que ce sont-là des biens limités” (A. Walras 1831, p. 103).

²¹ When citing Léon Walras’s *Éléments* (1874), we use the following convention: number of section (*section*) in Roman numerals, followed by number of lesson (*leçon*), and proposition number within the lesson in Arabic numerals.

²² L. Walras discussed material and immaterial utilities in Lesson 5 (Walras 1874, sec. I, prop. 5).

Incomes and production services must satisfy another requirement in order to be valued: coercibility (A. Walras 1831, pp. 43–45; L. Walras 1874, sec. I, lesson 5, prop. 23). Wealth does not come from production but from appropriation, and only the rare, because it is limited, is coercible. Thus the analysis of value is inseparable from the interpretation of natural property rights.²³ Say's distinction between intangible and material utilities matters little, since even the former constitute wealth if they are appropriable because of their rareness.²⁴

Utility is a general and abstract quality with two dimensions: intensity and extension. The first refers to the subjective appreciation of the need for a good, while the second refers to the number of individuals who share this need. But extension is positively correlated with intensity insofar as goods that are very necessary and those that lend themselves to more different uses are the most demanded.²⁵ Also, goods of “direct utility” in Say's sense, i.e., those more apt to satisfy a final need—cloth as opposed to wool, for example—are of greater extension than those of “indirect utility” and therefore more rare and valued. Extension and direction are also positively correlated. Inspired by this reasoning, it would suffice to express total utility as the product of demand times a cardinal, subjective utility. This utility would vary according to the urgency and direction of the need, but would be shared equally by all individuals regardless of their individual consumption of the good. It is evident that Auguste Walras was unable to identify intensity as the principle of diminishing marginal utility, and his failure to do so had repercussions on the consistency of his theory of value.

This theory takes shape in chapters XVI to XVIII of *De la nature*. Like Isnard, Auguste Walras distinguished between absolute and real or effective demands and supplies (A. Walras 1831, p. 56). The absolute supply of a good a is its limited, available, and coercible endowment, q_a . Its quantity depends on the price of the capital services involved in its production. Absolute demand results from multiplying the cardinal estimate of the utility of the endowment of the good by the number of agents that demand it [$U_a(q_a)$]. The value of a good (v_a) is the ratio between its demand and its absolute supply. Absolute demand is always greater than absolute supply, since the inability of the limited provision to meet the sum of needs is an essential condition for appropriation (A. Walras 1831, p. 147).

$$v_a = \frac{U_a(q_a)}{q_a} v_a > 1 \quad (1)$$

Effective supply (o_a) is the part of the limited allocation taken to exchange. Effective demand reflects the cardinal utility that would report the amount of the good whose consumption has not been satisfied [$U_a(q_a - o_a)$]. “The price of the various goods”—as Auguste Walras assured readers—“is proportionate to supply and demand; the value is

²³ “Qui n'est que l'appropriation légitime” (L. Walras 1874, sec. I, lesson 5, prop. 23). Indeed, Pierre-Henri Goutte and Jean-Michel Servet insist that A. Walras's attention to the theory of value stemmed from his primary interest in the analysis of property rights (Walras and Walras 1987–2005, vol. I [1990]).

²⁴ Natural wealth is neither reproducible nor distributable. It is of limited access and not consumable. Its usage does not reduce its stock. Social wealth is the product.

²⁵ “Lorsque l'utilité d'une chose augmente, dans son intensité ou sa direction, lorsque l'usage se répand, ou que la consommation s'en propage, sa rareté augmente en même temps, et la valeur croît avec la rareté” (A. Walras 1831, p. 117).

in direct relationship to the quantity demanded and inverse to the quantity offered” (A. Walras 1831, p. 136). While absolute supply and demand would never intersect, effective supply and demand may or may not be in equilibrium. The “vulgar meaning” of *rareté* assumed by authors such as Condillac, Say, and Garnier is in fact that of an effective excess of demand. Prices could be expressed as follows:

$$p_a = \frac{U_a(q_a - o_a)}{o_a} \quad (2)$$

Algebraically, an infinite price would correspond to a null effective supply: a would not properly be a good, but something useless, and its coercibility would be meaningless. And a null price would mean that $q_a = o_a$, in which case a would be either an unlimited good, devoid of value or incoercible, or a limited good whose effective demand has been completely satisfied. Between these extremes, any useful good offered in a lower amount than its endowment, if it is *rare*, will have a value and a price. In the absence of exchange, *rareté* (r_a) is identical to value. Following Auguste Walras, rareness may be stated as:

$$r_a = \frac{U_a(q_a) - U_a(q_a - o_a)}{q_a - o_a} \quad (3)$$

The consideration of absolute and effective demand is the only difference, although a noticeable one, between A. Walras’s and Isnard’s formulations. Changes in the price of production services do not alter rareness.²⁶ However, this modelling does not solve the problem that Auguste Walras found in his narrow understanding of the intensity of utility. The law of diminishing marginal utility would imply that, as the effective supply approached the entire limited endowment, effective demand decreased. But intensity also affects absolute demand, so the resulting effect on the numerator of *rareté* remains undetermined.

The solution underwent several subtle changes introduced by Léon Walras. The first of these was to reconsider the direction, extent, and intensity of utility as independent characteristics. Management would multiply the amount of useful goods through industrial operations whose purpose was to transform indirect utilities into direct ones (L. Walras 1874, sec. I, lesson 7, prop. 34). Extension and intensity were discussed in Lesson 14. The extension of the usefulness of a good would only shift its own demand curve, regardless of intensity, which was now interpreted differently: “understanding as *rareté* the intensity of the last need satisfied by a quantity of the good possessed” (L. Walras 1874, sec. II, lesson 14, prop. 75; our translation). The second modification was the interpretation of *rareté* as a true scientific quality, a quotient of two comparable, continuous, and differentiable functions (L. Walras 1874, sec. II., lesson 23, prop. 126).

Indeed, we could define *rareté* as “the derivative of the effective utility with respect to the amount possessed” (L. Walras 1874, sec. II, lesson 18, prop. 98; our translation). Interpreting Auguste Walras’s expression (3) in his son’s terms,

$$\lim_{o_a \rightarrow q_a} r_a = \lim_{o_a \rightarrow q_a} \frac{U_a(q_a) - U_a(q_a - o_a)}{q_a - o_a} = \frac{\partial U_a(q_a)}{\partial q_a} \quad (4)$$

²⁶ “Or la diminution des frais de production équivaut à une augmentation de l’offre générale, à une diminution de la demande absolue comparée à l’offre absolue, et c’est par cela même qu’elle permet une augmentation dans la demande réelle, dans la demande accompagnée de l’offre équivalente” (A. Walras 1831, p. 141).

In fact, *rareté* is nothing but marginal utility and was first transcribed in its well-known form as the culmination of Lesson 14 (L. Walras 1874, sec. II, lesson 14, prop. 75):

$$r_a = \varphi_{a,1}(q_a)$$

Infinitesimal calculus, although presented only as an intuition in the first edition of the *Éléments*, solved the paradox of whether utility and rareness were different or correlated concepts: in the end, rareness and marginal utility are identical.

V. CONCLUSION

Rareté has evolved as a philosophical quality to the point where it has become identified with marginal utility as a scientific quality. This evolution starts and ends in Lausanne, spanning from the first naturalistic versions of Pufendorf by Barbeyrac and Burlamaqui, through the heterodox *Traité des richesses* by Isnard to the belligerent *De la nature de la richesse* by Auguste Walras and the mathematical systematization in *Éléments* by Léon Walras. We understand evolution in the sense that the Walrasian formulation of rareness solved its semantic ambiguities and its uncomfortable correlation with utility. However, it is actually a genealogical relationship that branches out from Aristotle through alternative developments at different times and in different contexts and is not limited to those explored in this article.

The common starting point is not, as would be deduced from the writings of Kauder and Rothbard, the Catholic heritage from the Thomistic ideas on value. It is known that the Aristotelian interpretation of value based on utility and rareness was part of scholastic knowledge centuries before the Reformation. It is in the Christian intellectual substrate and not exclusive to Catholics, Huguenots, Presbyterians, or Puritans. It has been shown that Calvinism does not necessarily lead to a labor theory of value and that the transmission of utility value is not unidirectional from late scholasticism to Austrian Catholic marginalism. Alternative developments in the utility theory of value arose with the positivity of natural law in civil and international codes, when exchange ceased to be an ethical and theological issue and became an economic activity. This does not imply questioning the importance of religious fact, which, though relevant, comes about less due to the influence of its precepts in the interpretation of value than to its overlapping in the construction of the political and economic map of an Enlightened Europe in which exchanges began to be seen as *commerce politique*.

The applicability of the utility and rareness theory of value, its adaptability and its inability to interpret and solve economic problems, is probably the key to understanding such developments. Examples include the persistence of *rareté* in the theories of value of the circle of Gournay to combat the physiocratic recommendations of economic policy, the revision of the utility value by Say and the last *philosophes économiques* in their eagerness to harmonize the new classical theory, and the recovery of Burlamaqui's *rareté* by Auguste Walras to refute them.

COMPETING INTERESTS

The author declares no competing interests exist.

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