


# FROM “TIRED MUSCLES” TO “MIGHT-HAVE-BEENS”: A DEBATE ON THE NATURE OF COSTS IN THE LATE NINETEENTH CENTURY

BY  
FABIO BARBIERI   
AND  
MARCELO LOURENÇO FILHO

*This article explores a debate on the theory of cost that occurred in the 1890s between economist Silas MacVane and Austrian economists. MacVane defended the idea of objective “real cost” and the Austrians argued for subjective opportunity cost. Although this debate is rarely mentioned, it represents a noteworthy episode of active contrast between ideas on value and on cost, with implications that are relevant for contemporary economists. By highlighting the incompatibility of the objective and subjective conceptions of cost, this debate sheds light on the evolution of economic theory. The contributions of relatively unknown authors, such as MacVane and David Green, are also discussed. We interpret the debate in terms of the contrast between research programs based on wealth and on exchange, and note that the gradual shift in the period regarding the fundamental problem that informs economic theory is key to understanding the modern concept of cost.*

## I. INTRODUCTION

The concept of cost has had different meanings throughout the development of economics. Since the Marginalist Revolution of 1871, which marks the transition between the theoretical traditions commonly labeled as classical and neoclassical schools, we can observe a reinterpretation of cost regarding the theory of value developed by this latter tradition. However, even a century and a half later, the new definition of cost still needs

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Fabio Barbieri: Associate professor of economics at Universidade de São Paulo, Brazil.  
Email: [fbarbieri@usp.br](mailto:fbarbieri@usp.br).

Marcelo Lourenço Filho: Graduate student in economics at Universidade de São Paulo, Brazil.  
Email: [lourencofilhomarcelo@gmail.com](mailto:lourencofilhomarcelo@gmail.com)

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to be used consistently in the economic literature (Buchanan 1978, ch. 3), generating some confusion about the concept (Alchian 1968). This demonstrates the necessity to examine the discussions that constitute the history of the cost concept in more detail.

While one might expect changes in science to be accompanied by explicit debates among advocates of conflicting explanations, as Max Planck (1950, p. 33) famously observed, the defenders of an old doctrine often simply perish and are replaced by scientists trained in the new tradition. In the field of economics, the authors of the Marginalist Revolution criticized the principles of the classical school, particularly the labor theory of value, while the defenders of the latter rejected the subjective theory of value, even if explicit debates were relatively rare. Nevertheless, a controversy over costs has emerged, which is the subject of this article.

The debate we address is an overlooked subset of the broader discussion known as the “cost controversy,” which split authors (including marginalists themselves) into two camps. The cost controversy came in the wake of discussions concerning the theory of value that took place at the turn of the twentieth century. Two traditions on cost can be identified: an English one, which understands the concept in objective terms as “labor and abstinence”; and a continental one, which conceives cost as a subjective dimension related to consumer preferences. The first group, represented by authors such as Alfred Marshall ([1890] 1920, bk. V), Francis Edgeworth (1894), and Jacob Viner (1932), follows the classical tradition in understanding costs as an objective variable linked to the physical effort of producing a good. This notion of cost is essentially backward-looking since it treats cost as a historical variable. The second group, whose leading exponents were Eugen Böhm-Bawerk (1890, 1894), Friedrich Wieser ([1889] 1893, 1892), Philip H. Wicksteed ([1910] 1933), and Frank Knight (1928), understand the cost in terms of the marginal utility of the best alternative when a choice is made. This cost concept is subjective and inseparable from the agents’ preferences. And it is a forward-looking conception, i.e., an assessment of the value of the opportunity that could have been obtained if another course of action had been taken.

While the contrast between these two conceptions of cost does not receive the attention it deserves in contemporary studies in the history of economics, even less noted is the exchange about the nature of costs that we discuss here that occurred between 1890 and 1894 between proponents of the Austrian strand of the neoclassical tradition and a little-known partisan of the classical doctrine.

This five-year controversy consists of a book and seven articles published in the *Quarterly Journal of Economics* (*QJE*) and the *Annals of the American Academy of Political and Social Science* (*AAPSS*). Those involved in the debate were Silas MacVane (Harvard University) on the classical side; and Eugen Böhm-Bawerk (at the time without formal academic activities), Friedrich Wieser (University of Prague), and David I. Green (Johns Hopkins University) on the Austrian side. In this paper, the term “Austrian” is used not to identify economists born in the Austro-Hungarian Empire, as is the case with Wieser and Böhm-Bawerk, but to characterize defenders of the research tradition originating in Vienna from the work of Carl Menger, a tradition identified with principles such as subjectivism and methodological individualism, and market process theory, among other characteristics. In this sense, in the debate discussed here, Green can be labeled as “Austrian,” as noted by Emil Kauder (1965, p. 109).

In this debate, the disputed subjects were mainly the theories of value and cost. The Austrians defended the newly introduced subjectivist approach of marginal utility,

which understands cost as a foregone marginal utility. In contrast, MacVane defended the classical approach, in which production costs are objective variables consisting of labor and waiting.

The examination of this debate is essential for several reasons. For contemporary economists, examining this episode in the history of ideas clarifies the uses of fundamental concepts. Since the notions of cost as a backward- and a forward-looking variable are incompatible and coexist in the modern economist's analytical repertoire, studying the differences between them can be fruitful. The study of the debate is further justified because this exchange involves the participation of relatively unknown authors, such as MacVane and Green, whose contributions should be added to our understanding of the evolution of economic theory. Green, in particular, is the author of "Pain-Cost and Opportunity-Cost" (1894), the article where, according to Herbert Davenport (1908, p. vii) and Joseph Schumpeter ([1954] 1981, p. 884n20), the expression "opportunity cost" appeared for the first time.

Although there are brief mentions of the debate between the Austrians and MacVane in the economic literature (Viner [1930] 2013, p. 59; Dorfman 1949, p. 245; Mason and Lamont 1982, p. 388; Hovenkamp 1990, p. 1047; Gunning 1998, p. 101), we are unaware of any work that undertakes a historiographical reconstruction of it. To fill this gap, we aim to analyze the positions presented in light of the authors' arguments, clarify the crucial points of disagreement, and discuss the contributions that the controversy brought within the scope of economic theory.

We consider the debate between Austrians and MacVane also to be of historical significance because it is an episode of dynamic contrast between the ideas of the classical doctrine, defended by MacVane, and statements that were in their early stages and did not yet constitute a well-established whole, such as the marginal utility approach, supported by the Austrians. In this paper, we interpret the lack of mutual understanding about opposing positions on costs in terms of the gradual manner by which the allocative problem comes to be perceived as the fundamental problem that informs economic theory.

To reach this conclusion, our understanding of classical and neoclassical economics follows John Hicks (1976), who proposes that these research programs can be differentiated regarding the fundamental economic problem that informs each tradition. On the one hand, classical economics is understood in terms of plutology, i.e., the study of the production and distribution of material wealth, and, on the other hand, neoclassical (or "marginalist") economics is understood in terms of catallactics, i.e., the study of exchanges and the allocation of scarce resources among alternative ends. As pointed out by James Buchanan (1978), the classical tradition has always been identified with the objective notion of cost, while among neoclassicals, some adhere to the objective idea of cost (e.g., Alfred Marshall) and some are adherents of the subjectivist notion of cost (e.g., the Austrians).

This article is organized as follows: after this introduction, we present the debate between the Austrians, on the one hand, and MacVane, on the other. We discuss and analyze each of the texts regarding MacVane's adherence to plutology and the Austrians' adherence to catallactics. We conclude by arguing that persistence of two different conceptions of costs throughout the debate can be attributed to the gradual shift in the fundamental problem to be addressed by economic theory, from the

production and distribution of material wealth to the allocative choice in the face of scarcity.

## II. MACVANE'S WORKING PRINCIPLES

Silas Marcus MacVane (1842–1914) was a Canadian economist and historian who spent much of his career in the United States. After studying in Germany in his youth, he joined Harvard University as an assistant professor in 1875, initially in political economy, and later, in 1878, transferred to the Department of History.<sup>1</sup> Much of MacVane's published intellectual economic output took place after his transfer. In economics, MacVane's approach is essentially that of the classical tradition.<sup>2</sup> The perspective adopted by MacVane thus clashes with the beliefs of the proponents of the marginal utility approach. In addition to the debate with Austrians discussed in this text, MacVane also engaged in an intellectual controversy with Marshall and Francis A. Walker over the theories of wages and profits.<sup>3</sup>

MacVane's major work in economics is his book *The Working Principles of Political Economy* (1890a). It is precisely this work that starts the debate between him and the Austrians. The work had been published to serve as a manual for introductory courses in political economy. According to MacVane (1890a, pp. 11–16), following the plutological tradition, the general subject of economics is wealth: its object is the study of the conditions under which occurs what he calls the “struggle for wealth,” and the objective of economic analysis is the study of the principles that govern the production and distribution of wealth, as well as the identification of the circumstances that favor or hinder the creation of wealth.

Regarding the theory of value, the essence of MacVane's position lies in his consideration that its ultimate foundation is the objective cost of production. For him, the creation of value requires some sacrifice from men, and this manifests itself in two possible (and non-excluding) forms: labor and waiting. This is the same approach as the classical tradition. In this approach, what he calls *value* is *exchange value*, which emerges from buying and selling relationships. This is different from *use value*, which he calls *intrinsic value*. MacVane (1890a, p. 88) highlights that a product would have exchange value only if it were useful, “[b]ut, beyond this, there is no connection between the exchange value of commodities and their intrinsic utility.”

At the outset, MacVane clarifies that when using the idea of “production costs,” he is not referring to monetary costs, that is, the pecuniary expression of payments made by employers to workers, for example. According to him, the existence of different levels of use of labor in various sectors and other peculiarities of production plants makes it

<sup>1</sup> This biographical information is based on *Harvard University Gazette* (1914, pp. 149–150).

<sup>2</sup> As we will see in section V, Wieser (1892) argues that the main theoretical influence on MacVane came from David Ricardo, especially because of MacVane's emphasis on labor in his theories of value and cost. This conception is challenged by MacVane (1893b), who points out that his cost theory does not reduce the determination of cost to labor. However, as we shall see, MacVane argues, still in *The Working Principles*, that labor is the “chief element” of cost.

<sup>3</sup> See MacVane (1887b, 1888), Marshall (1888a, 1888b), and Walker (1888).

difficult to use this measure of production cost. Thus, what he intends is to present what he calls the “true cost of production.”

The question that then arises is: Where to find this cost measure? In his opinion, the answer to this question (which is decisive for the entire debate that unfolds) lies in observing production itself, whose nature requires labor, and some labor as advances to produce enjoyable commodities. MacVane defines every commodity’s production cost as the labor and waiting necessary to produce it. Every production demand from the agents involved these two elements, which MacVane (1890a, p. 95) calls *burdens*: “first the burden of labor and then the burden of waiting for our reward.” These elements are the true costs of production.

For MacVane, although waiting is undoubtedly essential, labor is the chief element of the cost of production. And this cost comprises all the labor, “whether of hand or head” (MacVane 1890a, p. 96), expended in the production of the commodity. For him, the most appropriate way of measuring labor is not in terms of days or hours but in terms of sacrifice: an hour of labor in a coal mine does not involve the same amount of sacrifice as an hour of labor in the field, and thus the product of an hour’s work in the first sector is worth more than the product of an hour’s work in the second sector. The best estimate of the sacrifice required by each industry comes from the workers’ perception.

The consideration of waiting as a cost of production derives from the fact that labor, despite being central to the production process, cannot instantly transform inputs into enjoyable commodities. This connects the element of waiting with capital: “Capital at any moment represents the labor put into production without receiving, as yet, any enjoyable return” (MacVane 1890a, p. 100). Waiting is a sacrifice for two reasons: by the imposition of nature of a certain rhythm of maturation, detached from the rhythm of human work; and by human impatience, which always prefers the immediate use of goods. The average interest rate gives a possible way of measuring a community’s willingness to sacrifice waiting.

MacVane argues that “waiting” is a more adequate concept than “abstinence,” present in the classical tradition and associated mainly with Nassau W. Senior.<sup>4</sup> In 1887, MacVane proposed this change in an article called “Analysis of Cost of Production,” published in the *QJE*.<sup>5</sup> Some associate Marshall with the proposal to call abstinence “waiting”: he defines the interest rate as a reward for waiting in his *Principles of Economics*. However, Marshall ([1890] 1920, p. 193, fn2) recognizes that MacVane first proposed this argument in the 1887 article. MacVane details his proposal in an appendix to *The Working Principles*, in which he lists several reasons for proposing this modification. In general terms, we can mention that he considers that the proposed change sheds light on the importance of the temporal element in production, as it allows for an adequate treatment of wages and links these to the economic cost of waiting.<sup>6</sup>

<sup>4</sup> See Senior (1836, pp. 97–103).

<sup>5</sup> See MacVane (1887a). In this text, MacVane does not criticize (in fact, he does not even cite) Senior’s analysis but that of John Cairnes. Commons ([1934] 1990, pp. 500–501) argues that, to propose the change, MacVane was inspired by Anne Robert Jacques Turgot, who understood interest as a payment to the “amount of waiting.”

<sup>6</sup> For a critique of the concept of waiting, as presented by MacVane, see Cassel (1903, pp. 41–42).

One of MacVane's central propositions is that, although use value is necessary for exchange value, utility bears no relation to the rates at which commodities are exchanged. To clarify the issue, he introduces the "law of natural value" (MacVane 1890a, p. 105), according to which a market tends to a state where equal sacrifices receive similar rewards in return. That is why MacVane does not defend that the cost of production directly determines the value but regulates it. That is, despite the short-term disturbances, the exchange value always tends to the cost of production. In short, for MacVane, exchange value derives from objective production costs, not from its use value—a position that the Austrians will contest.

MacVane, like David Ricardo, dedicates part of his book to explaining the exceptions to the general law of value, i.e., cases in which exchange value does not tend to equate to its "natural value." Generally, these are cases where the supply capacity is limited, the exchange value is mainly determined by demand, or both supply and demand are prevented from acting freely. These exceptions occur in the case of natural resources, non-reproducible goods (rarities, works of art, etc.), monopolies (he mentions patents), markets with barriers to entry, and sectors that demand highly qualified labor. Despite the existence of these cases, MacVane points out that they do not pose any threat to his general law of value since "[c]ompared with the great mass of exchange subject to ordinary rule, they are tiny in an amount: and the extent of their departure from the common law of value is not often great" (MacVane 1890a, p. 120), something reminiscent of what George Stigler (1958) referred to as Ricardo's 93% labor theory of value.

After exposing the theories of value and cost defended by MacVane, inspired by the plutological tradition and motivated by the search for a uniform measure of material wealth, we turn to its critique, undertaken by Böhm-Bawerk, which reflects the catalytic research program, associating value to allocative choices. However, the transition from one perspective to the other was gradual, as the course of the debate will reveal.

### III. BÖHM-BAWERK'S CRITICISM

Eugen Böhm-Bawerk (1851–1914) was born in Brno, in the Moravian region, and studied at the University of Vienna, where he earned a bachelor's and doctorate in law. Throughout his training, he had contact with economists from the German Historical School, but his most decisive influence was undoubtedly that of Carl Menger, founder of the Austrian School. Böhm-Bawerk gained notoriety in the public debate for his defense of the marginalist approach to economic theory, especially capital, value, and cost theories.<sup>7</sup>

In April 1890, i.e., a few months after the publication of MacVane's book, Böhm-Bawerk published a critical review in the *QJE*.<sup>8</sup> This was the starting point for the entire debate that unfolded in the following years. Entitled "MacVane's Political Economy," the text aimed to criticize two aspects of MacVane's work: the theories of value and cost,

<sup>7</sup> See Garrison (1999).

<sup>8</sup> There are also records of two other reviews of MacVane's book: one published by F. H. Giddings in July 1890 in the *Annals of the American Academy of Political and Social Science* and the other published in 1891 by Louis Cossa in the *Revue d'économie politique* 5 (3).



and the theories of profits and wages. The present work mainly focuses on the discussion concerning the former.

Böhm-Bawerk dedicates a few lines to frame the discussion regarding the *Metho-denstreit*, the controversy initiated by Menger and Gustav Schmoller concerning the method of economics. For Böhm-Bawerk, two main groups were dedicated to attacking the system of classical political economy. The first group, the authors of the German Historical School, were relatively successful in discrediting the teachings of the classical school but failed, according to him, in presenting an alternative doctrine. The second group, to which Böhm-Bawerk belongs, is characterized by economists who favor “abstract investigation.” The rejection of the classical theory of value depicts this last group. Still, its criticism was rooted in a new view of value based on marginal utility, which, as Böhm-Bawerk points out, at that time was gaining adherents with extraordinary rapidity.

Böhm-Bawerk states that MacVane, as a follower of classical doctrines, wrote his book in a “conservative spirit,” averse to the radical changes emerging at that time. He emphasizes that MacVane “has also accepted very few of the fundamental theoretic innovations of the last few years” (Böhm-Bawerk 1890, p. 332), referring to MacVane’s non-adherence to the principles of marginal utility theory.

Böhm-Bawerk’s fundamental critique is of MacVane’s idea that there is no *necessary* relationship between exchange value and the utility of goods and services. For him, MacVane ignores William Jevons’s suggestion that, ultimately, what explains exchange value is precisely the utility provided by the commodities, not their cost of production. That is, what guides exchanges is individuals’ subjective valuation of the marginal utility of products and not the physical sacrifice necessary to produce them.

A central element in this discussion is Böhm-Bawerk’s criticism of the interpretation of the concept of cost as an *exogenous* variable, assumed as given rather than explained, as in the approach focused on the allocative problem. In this sense, Böhm-Bawerk argues:

the modern theory looks upon the extent of the “cost” of a commodity—that is, the amount of the value of the things which are used up in its production, the labor, materials, and tools—as *something which itself calls for explanation*, and comes to the conclusion that in the end the value of the cost is determined by the value of the product. But Professor Macvane continues to follow the classic lines and bases the value of the product finally on the amount of the cost. (Böhm-Bawerk 1890, p. 333; our emphasis)

As seen above, MacVane considers that labor and waiting are the sacrifices required by the nature of production, but he does not present a theory about what explains these production costs. The idea of marginal utility, presented by Böhm-Bawerk as the “modern theory,” addresses this last issue, i.e., it takes cost as an *endogenous* variable. In short, while, for MacVane, value is given (or “regulated”) by cost, for Böhm-Bawerk, the relationship is inverse: cost is explained in terms of value. More specifically, for him, the cost of a commodity is determined by the value of the alternative that ceased to exist when the course of action that culminated in that commodity was taken.<sup>9</sup>

<sup>9</sup> This idea is developed in more detail in the article by Wieser (1892), which we discuss later.

Böhm-Bawerk praises MacVane's introduction of the concept of "waiting," a concept closer to Böhm-Bawerk's theory of interest. The problem, for Böhm-Bawerk, is that MacVane does not intend to investigate time preference, i.e., he argues that, by not considering that individuals value present and future goods differently (they make subjective choices weighted by their distance in time), MacVane falls back into the problems of the classical tradition, since the interest rate is presented merely as a reward for the "real cost" of waiting/abstinence: "He returns, after all, to the paths of the classical school. He explains interest, after the fashion of Senior, as merely the reward of abstinence" (Böhm-Bawerk 1890, p. 333).

In short, the fundamental divergence between MacVane and Böhm-Bawerk resides in the following point. MacVane views cost as an exogenous variable, that is, as a fact of nature, necessary for the creation of value and wealth. In contrast, Böhm-Bawerk argues that cost itself requires an explanation and defines it as the sacrifice of value when faced with a choice. Up to this point, both authors reaffirm the meaning of the concept of cost as it is used in their respective theoretical traditions.

#### IV. MACVANE'S REPLY

In October 1890, MacVane published in the *QJE* his reply to Böhm-Bawerk, called "Böhm-Bawerk on Value and Wages." In the text, MacVane notes that he intends to respond primarily to the unfavorable opinions that Böhm-Bawerk had presented regarding his ideas on value and wages. Nevertheless, instead of reacting only to the article, MacVane responded to the criticisms based on his reading of Böhm-Bawerk's recently published book, *The Positive Theory of Capital* ([1889] 1891).

Despite praising the "scientific spirit" of Böhm-Bawerk, MacVane says neither the article nor the book could present sufficient arguments to discredit the classical doctrine and its theory of value. He also considers the theory defended by Böhm-Bawerk, according to which the value of any product depends on its marginal utility, to be very complicated. Furthermore, MacVane opines that the importance attached to the theory of marginal utility at that time was an exaggeration since, in addition to not representing any real theoretical advance, it was less convincing than the classical theory:

In my humble judgment, the importance of the new theory has been greatly exaggerated by its advocates. After all has been said, they seem to me to have done little more than to put the familiar principle of demand and supply in a new and, as I think, less convenient form. As a fundamental law of value, it can hardly be regarded as an improvement on what we had before. (MacVane 1890b, p. 25)

MacVane believes that Böhm-Bawerk and the other marginalists ignore an issue that he considers fundamental: the actual relationship that exists between economic exchange and individual efforts to satisfy their desires. For MacVane, classical theory has, in its essence, the merit of understanding the course of action of individuals, explained in terms of efforts undertaken (that is, labor and waiting) to obtain enjoyable commodities. In contrast, the subjectivist alternative uses an entirely unrealistic calculation of marginal utilities on the part of agents.



MacVane then focuses the discussion on the nature of costs. He argues that the new theory, according to which cost is given in terms of value, does not deny that exchange value tends to correspond to the cost of production but that this would be accidental. According to the new theory, the value of a commodity determines its value and the value of the factors of production employed, such as labor and capital.<sup>10</sup> MacVane points out that the cost of a commodity cannot be, at the same time, the value of labor and capital "since capital is itself a product of labor" (MacVane 1890b, p. 27).

Furthermore, regarding the concept of waiting, MacVane emphasizes the importance of considering it within the scope of the production process. As Böhm-Bawerk (1890, p. 333) claims, his explanation does not incur the error of considering abstinence as an end. According to MacVane (1890b, pp. 42–43), "[s]avings as such produce nothing: abstinence in itself produces nothing. Savings are only for the payment of wages in advance of product." There is, therefore, a basis from a productive point of view for waiting to receive a remuneration: it is an advance that can be explained in material terms (enjoyable commodities) and not in terms of subjective time preference.

MacVane also reveals his resistance to Böhm-Bawerk's idea that value determines cost; for him, that is absurd. It would be enough to look at production to understand that the cost of a product consists entirely of the arduous efforts and sacrifices to obtain it. As we have presented, for Böhm-Bawerk, these factors, which MacVane calls "costs," are nothing more than products that also have value. MacVane criticizes this consideration:

He [Böhm-Bawerk] constantly speaks of labor in this way, classing it as "productive goods" with materials, implements, machines, etc. It is evidently not without reason that one who includes so wide a range of things under the head of commodities should wish to find a law for their value independently of cost of production. His list of goods includes too many things for which no cost could be assigned. (MacVane 1890b, pp. 28–29)

For MacVane, Böhm-Bawerk errs in regarding labor and waiting as elements that should be explained in terms of value. This is because, for him, labor and waiting, i.e., production costs, are human efforts required of anyone wishing to produce something. They are, therefore, exogenous variables explaining the value and not variables to be defined by any conception of value.<sup>11</sup>

The principle of marginal utility is seen by MacVane as necessary for economic theory. Still, he considers that as "a fundamental law of value, ... it can never satisfy critical readers" (MacVane 1890b, p. 30). According to him, the new theory does not explain why goods are exchanged in specific proportions but explains only why goods that have the same cost of production have different levels of demand. The usefulness of the new theory consists in explaining eventual fluctuations in value, given by demand, around the point fixed by the objective costs of production.

<sup>10</sup> This idea is developed in greater detail by Wieser in his "theory of imputation." See Wieser ([1889] 1893).

<sup>11</sup> "The statement that 'the value of the cost is determined by the value of the product' [made by Böhm-Bawerk] does not seem to me to convey much, or indeed any, light. Holding that material commodities alone have true exchange value, that these belong to a wholly different category from the human exertions by which they are produced, and that the relation of product to exertion is that of reward, and reward only, I am unable to conceive of the attribute of exchange value as belonging to the cost of products" (MacVane 1890b, p. 29).

In the face of the contrast between two different theories of value, this initial exchange reveals a mere unmodified restatement of the principles of each theory. However, the absence of a synthesis can be interpreted as the differences between the respective research programs. In the plutological perspective, the principle of marginal utility concerns value in situations other than long-term equilibrium, something of little interest to scientists concerned with conceptualizing the amount of wealth produced. In the catalactic perspective, on the other hand, treating cost as something exogenous to value theory itself disregards the alternative uses of scarce resources. It is precisely from the work of economists of the second generation of marginalists, when the central problem that informs economic theory becomes more explicit, that the cost controversy can be expressed in terms of this problem.

## V. WIESER'S CRITIQUE

The debate between Silas MacVane and Eugen Böhm-Bawerk cooled down, especially as the latter did not present a rejoinder to the former.<sup>12</sup> The controversy did not have any new episodes throughout 1891, being resumed only by the article written by Wieser, published in March 1892 in the *Annals of the American Academy of Political and Social Science* (AAPSS).

Friedrich Wieser (1851–1926) was an Austrian economist and sociologist who, together with Menger and Böhm-Bawerk, led the Austrian School at the turn of the twentieth century. Like Böhm-Bawerk, Wieser had contact with economists of the German Historical School and was decisively influenced by Menger. He was a professor at the University of Prague and the University of Vienna, where he joined as Menger's successor. His best-known work is *Natural Value*, published in 1889, in which he details his theory of value and cost and his "theory of imputation."<sup>13</sup>

In his article "The Theory of Value: A Reply to Professor MacVane" (1892), Wieser regrets that MacVane's objections went unanswered for a year. He also notes that, although MacVane's article responded to Böhm-Bawerk, he set out to respond to criticisms regarding the relationship between costs and marginal utility, for it was he who first proposed, among the Austrians, the subject in question.<sup>14</sup>

Wieser devotes part of his article to exploring aspects of the economic theory of Ricardo, who is, according to him, MacVane's greatest reference.<sup>15</sup> "The Ricardian theory of value is faulty because the theory of economics, which it presupposes, is faulty," says Wieser (1892, p. 36). According to him, the Ricardian system always seeks refuge in simplified examples of hunters, fishermen, and other primitive workers

<sup>12</sup> In 1891 Böhm-Bawerk was on leave from his position as a professor at the university, acting as the head of the Tax Department of the Ministry of Finance. In the following year, he was a member of the commission that proposed the monetary reform of Austria-Hungary (Garrison 1999).

<sup>13</sup> Biographical information is based on Hayek (1992, pp. 108–125).

<sup>14</sup> In fact, as Stigler (1994, p. 159) points out, much of the opportunity cost doctrine had already been advanced by Wieser in his 1876 article "Über das Verhältnis der Kosten zum Wert" ("On the Relation of Cost to Value"). See Wieser ([1876] 1929).

<sup>15</sup> "Professor MacVane will therefore pardon me for directing my polemic not only against him, but above all, against Ricardo, on whose economic conceptions he has based his arguments" (Wieser 1892, p. 24).

undertaking labor efforts to obtain "commodities." These examples make little reference to the different stages of production processes, consideration of which makes it more apparent what the fundamental economic problem is.

Wieser was the first author in the debate to note the fundamental distinction regarding the "economic problem" that informs the two research programs. For the classics, economic phenomena originate in the conflict between the need for work and the disutility it generates. According to the Austrians, argues Wieser, the conflict comes from another source, namely, the antagonism between infinite desires and scarce resources. This conflict gives rise to the study of economics as motivated by the allocative problem. Wieser (1892, p. 26) then adds that utility is, according to the Austrians, "the purpose of economic life" and that "not only commodities have value, but the means of production as well, if they secure products as articles of consumption which otherwise could not have been supplied."

Contrary to classical theory, the marginal utility approach has the merit of including productive factors, and not just final products, in its theory of value: final products have value for agents, and the productive means (land, labor, capital) are the more valuable the greater the value of what they produce or can produce. This is, by the way, a result of Wieser's theory of imputation. Furthermore, even if MacVane's theory were valid, says Wieser, it would still be necessary to examine the value of what MacVane calls "costs."

Wieser argues that the thesis of equalization between labor effort and its remuneration, which is MacVane's tendency towards "natural value," does not hold up in practice, given the recurrence, for example, of precarious, underpaid work. He argues that the remuneration of factors has nothing to do with effort but with skills, how much they yield to the employer, and how much value they create in terms of satisfaction for the final consumer.

Wieser considers that the Ricardian project of finding a uniform measure of value in physical sacrifice should be replaced by the Austrian project, which saw another consistent measure, that is, marginal utility: "The Austrian School seeks the uniform measure for estimating the value of the means of production and of the commodities, in the utility which they both create" (Wieser 1892, p. 38). From a practical point of view, argues Wieser, the businessman, to keep his business profitable, must adapt to market conditions: he finds means of production with alternative uses. His activity, therefore, is to adjust the value of products to the value of productive factors, which derives from their alternative uses, and it is from there that the concept of cost arises: "Cost consists in means of production having manifold applications, like iron, coal, and common labor, which even when they are employed in the production of a single commodity, are still estimated according to the value which they have in all their applications" (Wieser 1892, pp. 41–42).

In this way, the owners of the means of production value them according to the utility they can create. When each production process uses inputs, *it costs* something, says Wieser (1892, p. 42): "it costs exactly as much as the value which the material and labor required would have produced if rationally applied." In this sense, the cost is essential to guide producers in the supply of goods, acting as a regulator of the scarcity of factors: a high production cost, for example, indicates that there are other lines of production where inputs have greater value, which suggests that production should be reduced.

Wieser's article in response to MacVane was the last he wrote on theories of value and cost for many years (Hayek 1992, p. 117). Following the catallactic way of thinking, it

indicates that the definition of cost should be understood in terms of allocating scarce resources to different goods rather than studying the production of a particular one.

## VI. MACVANE'S TWO ANSWERS

MacVane responds to Wieser in two articles: the first published in the *QJE* in April 1893, under the title "Marginal Utility and Value" (1893a), and the second in November, in the *Annals of the AAPSS*, entitled "The Austrian Theory of Value" (1893b). MacVane's answer focuses on Wieser's arguments in the article discussed in the previous section but also draws on some excerpts from *Natural Value*. The two articles have several overlaps.

MacVane begins his critique of the Austrian cost theory by stating, "The most striking feature of the Austrian treatment of cost is that it makes value the measure of cost" (MacVane 1893a, p. 256). Given that it is impossible to reconcile two laws of value (of "real costs" and marginal utility), the Austrians used the principle of marginal utility to explain the cost itself. According to MacVane, this expedient proved unconvincing since the costs required by the nature of production are always and everywhere the sacrifices of labor and waiting: "It could be shown by experiment if need be," says MacVane (1893b, p. 19). And there would be no reason to fear the acceptance of labor as a central element of cost.<sup>16</sup>

MacVane considers the treatment given by Wieser and other Austrians to the theory of costs to present two serious problems: the failure to consider the actual cost of production processes, and the expression of costs in terms of marginal utility.

The first problem, according to MacVane, is that, by assuming that the cost of a product is regulated by the value of the inputs and productive factors involved in its production, the Austrians' analysis disregards the efforts that were necessary for these inputs and productive factors to be available to the producer. Austrian analysis, says MacVane, never starts at the beginning of the production process but always from some selected point in the middle of the process. This expedient is very convenient since, for the Austrians, the cost is the value of the means of production: their analysis of the costs always begins at some point where value had already been created (via labor and waiting). This is, according to MacVane, a significant flaw in the Austrian theory.

Regarding the second problem, MacVane argues that, for Wieser, cost does not even seem to exist: "Cost, as he views it, insists on being something or belonging to something that might have been, but is not" (MacVane 1893a, p. 269). It is, says MacVane, a strange concept. To demonstrate this, he cites a passage from *Natural Value*, where Wieser says that productions create value and destroy it,<sup>17</sup> which is unreal, since it contradicts MacVane's conception that, through labor and waiting, wealth and value are created.

Austrian theory states that the value of a factor of production is derived from the marginal utility of the products it can create. Still, once it is used in production, this same value is destroyed and makes up a cost of production. Thus, if the value of factors of

<sup>16</sup> MacVane (1893b, p. 17) goes so far as to suggest that those who oppose the thesis are afraid to grant some advantage from a theoretical point of view to the followers of Karl Marx, and concludes: "Science can have no fears; must accept all the facts just as it finds them."

<sup>17</sup> "The possession of production goods gives the promise of acquiring consumption goods later. Production, therefore, not only creates value, it also destroys value," says Wieser ([1889] 1893, p. 173).

production derives from the potential utility of what they can produce, and this configures the cost of production, then, says MacVane, for Austrians, there is no distinction between value, cost, and utility: “Value may be a consequence and an evidence of the cost of production; it can never be itself true cost to the producer” (MacVane 1893b, p. 22). Furthermore, MacVane (1893a, p. 268) notes that “[t]he unavoidable conclusion seems to be that the Austrian economists, in all their discussions of cost, have not discussed cost at all.”

The big problem, says MacVane, is that Austrians prefer, in their view of costs, to look anywhere but at the production itself. Meanwhile, the cost theory he favors has the great advantage of considering as the cost of production what men *feel* as cost:

The cost that comes home to producers in the form of *tired muscles and tedious waiting* for the enjoyable fruits of labor, *is not one that finds expression in terms of utility or value*. It looks to the production of things that have utility and value: it is itself, however, the conscious sacrifice of present ease and enjoyment for the sake of obtaining ‘utilities fixed and embodied in material objects.’ (MacVane 1893a, pp. 269–270; our emphasis)

Much of the controversy, for MacVane, is because Austrians evaluate value from a “subjective and psychological” point of view. At the same time, British and American economists were interested in the more “practical” side of value, which is, in fact, the object of interest to political economy. MacVane clearly expresses that the project of the classics was never the subjectivist one: “We have left that field uncultivated, contenting ourselves with the entirely practical side of value” (MacVane 1893a, p. 274). In this sense, he recognizes the validity and importance of the marginal utility approach and some of its implications<sup>18</sup> but only as a principle subordinated to the general law of value determined by production costs.

MacVane presents the marginal utility approach as broadly compatible with classical economics. He draws attention to the fact that to acquire goods on the market, individuals need to use their ability to produce something. In this process, their objective is to work as little as possible to buy as many other products as possible. In markets, the worker, with his preferences, will be faced with the exchange ratios between his products and the products he wants. These exchange ratios, when faced with the preferences of the individual, will determine how much of each commodity will be bought, according to its marginal utility. Thus, for MacVane (1893a, p. 280), the exchange value (given by production costs) determines the individual’s marginal utility. The direct implication of what MacVane argues is that the relationship between exchange values and marginal utility is the inverse of what the Austrians present.

MacVane’s reaction to Wieser reveals an unease with the notion of cost expressed as a value in an alternative use, a “might have been,” a reaction that can once again be understood if we keep in mind the centrality that the allocative problem was acquiring in the then-new catallactic tradition.

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<sup>18</sup> He says: “I have nothing but admiration for the patient skill with which the Austrian economists had worked out the play of human feelings in connection with the acquisition of material commodities. The principle of marginal utility is undoubtedly a most important contribution to economic theory” (MacVane 1893b, p. 31).

## VII. GREEN'S INCURSION

The two articles discussed in the previous section constituted Silas MacVane's final words in the debate. Wieser never published a rebuttal to MacVane's comments, and Böhm-Bawerk answered MacVane (and other critics) only some time later. In the meantime, however, a new perspective entered the debate: that of David I. Green, a professor at Johns Hopkins University (JHU). In his article "Pain-Cost and Opportunity-Cost," published in January 1894 in the *QJE*, Green sought to answer MacVane and, at the same time, clarify the concept of cost as subjective opportunity cost.

Among the authors addressed in this paper, Green (1864–1925) is the one about whom the least is known.<sup>19</sup> Born in New York in 1864, Green studied at Alfred University and, in June 1893, obtained his PhD from JHU, with a dissertation entitled "Value and Its Measurement." In the same year, he was appointed professor of social sciences at the same institution. At the time of Green's formation, JHU had become a leading center for studies on the marginalist theory of value, especially under the influence of Simon Newcomb, a mathematician and astronomer who had a particular interest in the works of Jevons and Antoine Cournot (Kauder 1965, p. 109). In this context, students and professors considered with interest the works of neoclassical economists, including the Austrians.

Enthusiastic about the ideas of neoclassical economics, Green was a frequent commentator in important American journals of public debates and intellectual polemics involving Austrians (especially Böhm-Bawerk and Wieser).<sup>20</sup> Regarding the opportunity cost doctrine, Green's importance is considerable. Davenport, cited by Buchanan (1978) as one of the first advocates of the idea of cost as an opportunity cost, quotes Green in the preface to his *Value and Distribution*: "As far as the present writer is informed, D. I. Green was the first to formulate the [opportunity cost] doctrine in entire definiteness" (Davenport 1908, p. vii). Furthermore, Schumpeter, reporting that the Austrians, by emphasizing the relevance of alternative uses of factors, formulate the concept of opportunity cost, adds: "The latter—very felicitous—the term is due to D. I. Green, 'Pain-Cost and Opportunity-Cost'" (Schumpeter [1954] 1981, p. 884n20). The evidence leads us to believe that Green is an author whose importance to the cost theory was underestimated, being somewhat overlooked in contemporary times.<sup>21</sup>

Green begins "Pain-Cost and Opportunity-Cost" by quoting an excerpt from *Marginal Utility and Value* that we reproduced in the section above, in which MacVane argues that the great advantage of the classical doctrine of costs is that it presents what men *feel* as cost. Green points out, in advance, that he disagrees with MacVane's view and intends to introduce a concept of costs based on the theory of marginal utility. He considers that one aspect of MacVane's criticism of the Austrians should be taken into account, namely the existence of "unpleasant sensations" inherent in production (Green 1894, p. 218), which, according to him, the theory of marginal utility did not adequately emphasize so far.

<sup>19</sup> Biographical information can be found in Personal Notes (1893, pp.107–108).

<sup>20</sup> See Green (1891, 1894, 1895).

<sup>21</sup> Green's ideas were previously explored by Spencer (2003), who discusses his contributions to the economic theory of labor supply. Spencer argues that Green was a forerunner of labor supply theory based on the income–leisure trade-off. See also Spencer (2004).



Green points out, however, that emphasizing this element is not equivalent to claiming, as MacVane does, that this is the fundamental element in explaining exchange ratios in the economy. He gives an example of a scientist who receives a certain amount of money for a class and, with that money, hires a worker for a domestic service. He says it is unreasonable to assume that both suffer the same amount of discomfort to receive the same amount of money. MacVane (1890a, p. 112), however, as we have discussed, argues that such a case would qualify as an exception to the law of value since the scientist performs skilled work, which is scarcer. However, Green (1894, p. 220) responds to this objection: "This is undoubtedly true, but the theory of value which omits the element of scarcity has slight application in the economic world." All factors of production, argue Green, are subject to limited supply. For him, looking at modern production processes is enough to see that "the rule of equal values for equal pains is not the law which actually determines exchange ratios" (Green 1894, p. 220).

The JHU professor states that the idea that the exchange value of goods, under competition, tends to correspond to the cost of production has been recognized since the beginning of economic theory. There is some accuracy in this. However, the problem resides in what is considered as a "cost," which is not the "real cost" of MacVane and the classics but the cost interpreted as an "opportunity sacrifice": "It is not only for the painfulness of labor and waiting that we insist upon being rewarded, but also, and more largely, for the opportunities foregone in accepting a certain line of action. Opportunity-cost thus becomes the chief force which determines the prevailing ratios of exchange" (Green 1894, p. 228).

Green provides examples: a worker would not work earning \$100 if there is an opportunity to work under the same conditions for \$200; working every day of the week or extending the workday does not just mean tiredness but renunciation of leisure; a farmer does not use an area as pasture if he makes more money using it for other ends. In short, the exchange value is based on what the individual renounces. It is this renouncement that, according to Green, constitutes the economic cost: "it is, in general, for this sacrifice of opportunity that we insist upon being paid rather than for any pain which may be involved in the work performed" (Green 1894, p. 222).

For example, the sacrifice of waiting invoked by MacVane, which justifies the payment of interest, is nothing more than a sacrifice of opportunity. Green argues that the possession of money presents a series of opportunities that the individual will not give up, for a certain period, without a reward: "the interest actually paid is gauged by the opportunities foregone rather than the pain hardened" (Green 1894, p. 224). Interest, therefore, compensates for these lost opportunities, and not the sacrifice of "tedious waiting."

Green then responds to MacVane, who, in his critique of Wieser, says, "Cost, as he [Wieser] views it, insists on being something or belonging to something that might have been, but is not" (MacVane 1893a, p. 269). Green argues that MacVane's comment is not a criticism, as, for Austrians, this is precisely the nature of the costs. Cost is the subjective assessment of the value of what the agent would get if he had not chosen his preferred course of action: "These opportunity-sacrifices must always have the *unreal character of might-have-beens*, but they come near enough to existence to have the controlling influence over objective exchange values. We need no other excuse for considering them in our theory of value" (Green 1894, p. 226n; our emphasis).

Under the marginal utility approach, the widely accepted result of economic theory that the exchange value of commodities tends to match their “cost” holds, says Green. He points out that economists should abandon the search for an explanation of costs based on the supply side: “the sacrifices of opportunity which determine the expenses of production must find their explanation upon the side of utility” (Green 1894, p. 228). That is, in line with Wieser and Böhm-Bawerk, Green argues that what explains costs are the preferences of agents, reflected by demand.

In general, the concept of costs as presented by Green, with which he criticizes MacVane’s view, is a result of the Austrian approach.<sup>22</sup> With the expression “opportunity cost,” Green emphasizes the “discomfort element” of cost because choosing something implies giving up all other options. However, even with this emphasis, the conceptualization is not different from that of the Austrians. Wieser (1892, pp. 41–42), when explaining the cost of productive factors, says that cost is determined by the fact that the means of production can be used in many different ways. The cost of production is understood in terms of the greater value of what could have been produced if the inputs had been “rationally applied” elsewhere. In this brief conceptualization, the opportunity cost appears clearly. In this sense, the “unpleasant” element of cost is also present: remember Wieser’s idea, recapitulated by MacVane, that productive lines, once they result from a choice of course of action, not only produce value but also *destroy it*, since, for Wieser, the cost is, above all, renunciation. In this fashion, Green, like Wieser, emphasizes the relationship between costs and the problem of choice among alternative uses of scarce resources.

### VIII. BÖHM-BAWERK: THE LAST DEFENSE

The debate ended with an article written by Böhm-Bawerk. In “The Ultimate Standard of Value” (1894), he proposes to evaluate the debate regarding this standard. Throughout the text, in which he mentions everyone involved in the debate, Böhm-Bawerk discusses how some controversies have been addressed in economics over decades, often beyond necessity. For him, the question of value determination fits into this type of controversy. Thus, Böhm-Bawerk posits that the concept of *cost* is the root of all disagreements regarding the determination of value: “For my own part, when, in our science, I find many clear and able thinkers at odds about a given point, I usually ask myself, where is the ambiguous or elusive concept with which they are playing. In this case, we need not search far afield; it is the concept of ‘cost’” (Böhm-Bawerk 1894, pp. 9–10).

In his reflections on the subject, Böhm-Bawerk differentiates two possible approaches to cost: a historical and a synchronous one. The first refers to the classical approach, and the second relates to the marginal utility approach. He argues that he considers the latter way of understanding cost much closer to that of everyday life but that “the historical mode of viewing cost is regarded by Professor MacVane as the only correct method” (Böhm-Bawerk 1894, p. 12). Regarding MacVane’s criticisms, Böhm-Bawerk comments:

<sup>22</sup> Böhm-Bawerk mentions Green and his “Pain-Cost and Opportunity-Cost” in “The Ultimate Standard of Value” (Böhm-Bawerk 1894, p. 28).

His [MacVane's] interpretation of the Austrian theory, however, is not always accurate, nor always free from polemic exaggeration. ... He holds that the only genuine economic cost of production is labor and abstinence (more correctly, waiting), which, in the case of freely reproducible goods, are the final and entirely independent regulators of value. (Böhm-Bawerk 1894, p. 8)

Böhm-Bawerk argues that the view advocated by MacVane has taken several forms throughout economic thought. In Böhm-Bawerk's view, MacVane, in particular, took this approach to an extreme: "In the case of Professor Macvane, the confusion is quite pronounced, as when he explains the cost of the classical law of cost as 'pain of labor and fatigue of muscles'" (Böhm-Bawerk 1894, p. 31). The point is that, as we have already highlighted, the confusion arises from the finding that there is a correspondence between exchange value and costs, but the direction of causality is problematic. Thus, Böhm-Bawerk considers that the value could be regarded as regulated by "labor and waiting" only if it is assumed that the synchronous cost calculation is presented as being entirely derived from these variables. Even then, this is completely different from the idea that the value of these variables is entirely derived from the sacrifice required by them.

The great merit of the Austrians in the investigation of value and cost, Böhm-Bawerk argues, was to have established a "universal law of leveling," which shows itself present in all stages of production and every sphere of economic life. The conceptualization of cost, which proves to be very complex, says Böhm-Bawerk, certainly does not follow the line defended by MacVane. "There is not, as Professor Macvane thinks, only one 'true conception' of cost" (Böhm-Bawerk 1894, p. 57). For Böhm-Bawerk, it is much more reasonable for the law of costs to operate so that the marginal utility of one good corresponds to the marginal utility of other products that could be produced with the same factors of production.

Böhm-Bawerk then refers again to the question that motivates his text: What is the ultimate foundation of value? And he replies: "If we wish to answer this question in a single phrase, then we cannot choose any less general expression than 'human well-being'" (Böhm-Bawerk 1894, pp. 59–60). This is the general approach of the Austrians to the subject, essentially different from MacVane's. Following the classical doctrine, MacVane recognizes that utility is a necessary condition for value but argues that the ultimate foundation of value lies in "real cost" and not in well-being and the satisfaction of human needs, as contended by the Austrians.<sup>23</sup>

## IX. CONCLUSION: CONSIDERATIONS ABOUT CONFLICTING IDEAS AND TRADITIONS

Throughout this paper, we presented a controversy over the nature of economic cost that took place in important American journals between 1890 and 1894. The controversy centered on two issues: the nature of the costs, and the correspondence between costs and exchange value. These questions ultimately relate to the divergence over the concepts of value and costs.

<sup>23</sup> Years later, Böhm-Bawerk again critically cites MacVane and his concept of "waiting." See Böhm-Bawerk (1903, pp. 19–24).

As we have discussed, for MacVane, the general law of value is governed by the costs of production, defined as labor and waiting. These are “burdens” imposed by nature, and all value is explained by all the labor and waiting undertaken in the past. For Austrians, the source of the value of something is its marginal utility. Similarly, the economic cost of a course of action is the utility given up when the individual choice has been made. This notion of cost is forward-looking since it constitutes a subjective assessment of the value that can be generated but is not in the context of the allocative problem. In this sense, the debate shows that the Austrians belong to the theoretical traditions that gave rise to the modern concept of opportunity cost. While, for Austrians, the principle of marginal utility is the basis for explaining value and production costs, for MacVane, it is useful only for defining different levels of demand for goods with the same production cost.

With the exposition of the debate between MacVane and the Austrians, we intend not only to present an episode of explicit conflict between the classical and neoclassical traditions but also to draw attention to a debate that, although little mentioned by economic historiography, is an essential episode in the general controversy over the nature of costs. Moreover, it was in this debate that Green (1894) coined the expression “opportunity cost.”

Our interpretation is that the divergence throughout the texts presented here naturally reflects the contrast between different research programs, in this case, classical and neoclassical. The first, represented here by MacVane, starts from the consideration that the fundamental economic problem is the production (and distribution) of material wealth in the face of the physical effort necessary to create it. The second, represented here by the Austrians, gives greater emphasis on the allocative problem, which defines value and costs in terms of allocating scarce resources to different projects according to each one’s ability to satisfy consumer preferences. Thus, the two research programs have differing views about how it is possible to offer a conceptualization of the variables discussed that reflect the nature of value according to each of the traditions.

The persistence of two different conceptions of costs throughout the debate can be attributed to the gradual shift in the fundamental problem to be addressed by economic theory, from the production and distribution of material wealth to the allocative choice in the face of scarcity. Although the change in the theory of value marked the Marginalist Revolution from its beginning, it was only with the second generation of neoclassical economists that the redefinition of the fundamental economic problem was fully established. As the allocative problem in general equilibrium became more prominent, the perception that the production structure could not be taken for granted was increased. Therefore, for adherents of the new theory, the discussion of value could not assume a fixed and determined amount of inputs in a particular production process but needed to consider rival uses of the same resources in different processes. In this theoretical environment, the subjectivist notion of cost naturally arose, based on the choice of other uses of scarce resources. However, in the transitional period studied in this debate, it was natural for differences to emerge gradually, with debaters focusing on the ultimate explanation of value—labor and waiting or marginal utility—rather than relating these notions to the problem of reproducing a production cycle or the problem of choice under scarcity.

Given the centrality of the allocative problem in modern economic theory, the Austrian position prevailed. Within the neoclassical tradition, however, the partial

equilibrium approach preserves the “pain cost” doctrine in the Marshallian scissors metaphor (cf. Marshall [1890] 1920, bk. V), despite the continental observation that both blades are made of the same material, namely, subjective evaluations. As the general debate about the nature of costs reveals, if all resources, including time, are seen as scarce, the choice between work and leisure can be described in terms of alternative uses of resources. Nonetheless, natural language still uses the notion of costs as the disutility of effort, which underscores the relevance for contemporary economists of the debate we have presented. As discussed, the concepts of objective and subjective cost are incompatible as they pertain to economic problems of different natures. When we view the economic problem as the allocative problem, the economic cost is the subjective opportunity cost.

Armen Alchian (1968), in this regard, seeks to clarify the subjectivist idea of cost by noting that each alternative is composed of a bundle of desirable and undesirable attributes of any course of action. The choice is made between, so to speak, vectors of the net benefit of each alternative, which accommodate the concept of the disutility of labor as an element. Buchanan (1978), bearing in mind the same notion of the cost associated with choice, scrutinizes the implications of the subjective idea of cost and contrasts it with the objectivist tradition using examples from the history of economics.<sup>24</sup>

The debate between Austrians, who defended the new subjectivist conception of cost, and MacVane, a defender of the classical tradition, constituted an essential episode in the cost controversy. By exploring this little-known debate here, we hope to contribute to enriching the debate among economists in general and historians of economics in particular, especially regarding the more subtle implications of the concept of cost.

## COMPETING INTERESTS

The author declares no competing interests exist.

## REFERENCES

- Alchian, Armen A. 1968. “Cost.” In *International Encyclopedia of the Social Sciences*. Volume 3. New York: Macmillan, pp. 404–415.
- Böhm-Bawerk, Eugen. [1889] 1891. *The Positive Theory of Capital*. London: Macmillan.
- . 1890. “MacVane’s Political Economy.” *Quarterly Journal of Economics* 4 (3): 331–339.
- . 1894. “The Ultimate Standard of Value.” *Annals of the American Academy of Political and Social Science* 5 (2):1–60.
- . 1903. *Recent Literature on Interest: A Supplement to “Capital and Interest.”* New York: Macmillan.
- Buchanan, James M. 1978. *Cost and Choice: An Inquiry in Economic Theory*. Chicago: University of Chicago Press.
- Buchanan, James M., and George F. Thirlby, eds. 1981. *L.S.E. Essays on Cost*. New York: New York University Press.
- Cassel, Gustav. 1903. *The Nature and Necessity of Interest*. London: Macmillan.
- Commons, John. R. [1934] 1990. *Institutional Economics*. New York: Routledge.

<sup>24</sup> See also the collection edited by Buchanan and Thirlby (1981) on the subject.

- Davenport, Herbert J. 1908. *Value and Distribution*. Chicago: University of Chicago Press.
- Dorfman, Joseph. 1949. *The Economic Mind in American Civilization*. Volume III: 1865–1918. New York: The Viking Press.
- Edgeworth, Francis. 1894. “Professor Böhm-Bawerk on the Ultimate Standard of Value.” *Economic Journal* 4 (15): 518–521.
- Garrison, Roger. 1999. “Eugen Von Böhm-Bawerk: Capital, Interest and Time.” In Randall G. Holcombe, ed., *Fifteen Great Austrian Economists*. Auburn: Ludwig Von Mises Institute, pp. 113–122.
- Green, David I. 1891. “The Cause of Interest.” *Quarterly Journal of Economics* 5 (3): 361–365.
- . 1894. “Pain-Cost and Opportunity-Cost.” *Quarterly Journal of Economics* 8 (2): 218–229.
- . 1895. “Wieser’s Natural Value.” *Annals of the American Academy of Political and Social Science* 5 (4): 52–70.
- Gunning, J. Patrick. 1998. “Herbert J. Davenport’s Transformation of the Austrian Theory of Value and Cost.” In Malcolm Rutherford, ed., *The Economic Mind in America: Essays in the History of American Economics*. London and New York: Routledge, pp. 99–127.
- Harvard University. February 21, 1914. *Harvard University Gazette* IX (22).
- Hayek, Friedrich August. 1992. *The Fortunes of Liberalism: Essays on Austrian Economics and the Ideal of Freedom*. London: Routledge.
- Hicks, John. 1976. “‘Revolutions’ in Economics.” In Spiro Latsis, ed., *Method and Appraisal in Economics*. Cambridge: Cambridge University Press, pp. 207–218.
- Hovenkamp, Herbert. 1990. “The First Great Law & Economics Movement.” *Stanford Law Review* 42 (4): 993–1058.
- Kauder, Emil. 1965. *History of Marginal Utility Theory*. Princeton: Princeton University Press.
- Knight, Frank H. 1928. “A Suggestion for Simplifying the Statement of the General Theory of Price.” *Journal of Political Economy* 36 (3): 353–370.
- MacVane, Silas M. 1887a. “Analysis of Cost of Production.” *Quarterly Journal of Economics* 1 (4): 481–487.
- . 1887b. “The Theory of Business Profits.” *Quarterly Journal of Economics* 2 (1): 1–36.
- . 1888. “Business Profits and Wages: A Rejoinder.” *Quarterly Journal of Economics* 2 (4): 453–468.
- . 1890a. *The Working Principles of Political Economy*. New York: Effingham, Maynard & Company.
- . 1890b. “Böhm-Bawerk on Value and Wages.” *Quarterly Journal of Economics* 5 (1): 24–43.
- . 1893a. “Marginal Utility and Value.” *Quarterly Journal of Economics* 7 (3): 255–285.
- . 1893b. “The Austrian Theory of Value.” *Annals of the American Academy of Political and Social Science* 4 (3): 12–41.
- Marshall, Alfred. 1888a. “Wages and Profits.” *Quarterly Journal of Economics* 2 (2): 218–223.
- . 1888b. “Business Profits and Wages.” *Quarterly Journal of Economics* 3 (1): 109.
- . [1890] 1920. *Principles of Economics*. Eighth edition. London: Macmillan.
- Mason, Edward S., and Thomas S. Lamont. 1982. “The Harvard Department of Economics from the Beginning to World War II.” *Quarterly Journal of Economics* 97 (3): 383–433.
- Personal Notes. 1893. *Annals of the American Academy of Political and Social Science* 4: 106–115.
- Planck, Max K. 1950. *Scientific Autobiography and Other Papers*. New York: Philosophical library.
- Schumpeter, Joseph A. [1954] 1981. *History of Economic Analysis*. London: Routledge.
- Senior, Nassau W. 1836. *An Outline of the Science of Political Economy*. London: W. Clowes and Sons.
- Spencer, David A. 2003. “The Labour-less Labour Supply Model in the Era before Philip Wicksteed.” *Journal of the History of Economic Thought* 25 (4): 505–513.
- . 2004. “From Pain Cost to Opportunity Cost: The Eclipse of Work in Economic Theory.” *History of Political Economy* 36 (2): 387–400.
- Stigler, George J. 1958. “Ricardo and the 93% Labor Theory of Value.” *American Economic Review* 48 (3): 357–367.
- Stigler, George J. 1994. *Production and Distribution Theories*. Piscataway: Transaction Publishers.
- Viner, Jacob. [1930] 2013. “First Term.” In Douglas Irwin and Steven G. Medema, eds., *Jacob Viner: Lectures In Economics 301*. London: Routledge, pp. 19–72.



- Viner, Jacob. 1932. “The Doctrine of Comparative Costs.” *Weltwirtschaftliches Archiv* 36 (2): 356–414.
- Walker, Francis A. 1888. “A Reply to Mr. MacVane: On the Source of Business Profits.” *Quarterly Journal of Economics* 2 (3): 263–296.
- Wicksteed, Philip H. [1910] 1933. *The Common Sense of Political Economy*. London: Routledge and Kegan Paul.
- Wieser, Friedrich. [1876] 1929. “Über das Verhältnis der Kosten zum Wert.” In Friedrich August Hayek, ed. *Gesammelte Abhandlungen*. Tübingen: J.C.B. Mohr, pp. 377–404.
- . [1889] 1893. *Natural Value*. London: Macmillan.
- . 1892. “The Theory of Value: A Reply to Professor MacVane.” *Annals of the American Academy of Political and Social Science* 2: 24–52.