

The Austrian Marginalists: Menger, Böhm-Bawerk, and Wieser

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17.1 INTRODUCTION

This chapter delineates the nature of the Austrian contribution to the marginalist revolution in the works of Carl Menger, Eugen Böhm-Bawerk, and Friederich Wieser. Although it will be unavoidably comparative, the focus will be on the origins and development of a distinct line of Austrian marginalism, particularly in the work of Menger. That is, the goal is not just to show that the Austrians marginalists were saying something different; rather, it is also to trace how those differences, which begin with Menger, were to play themselves out in the work of the next generation of Austrians. In particular, as the classic contributions of Erich Streissler (1972) and William Jaffé (1976) have noted, it was the *subjectivism* of the Austrians that distinguished them from the other marginalist revolutionaries. Subjectivism constitutes the thread that united the Austrian marginalists, although it is a thread that began to weaken with the work of Wieser and Böhm-Bawerk and was almost totally lost by the 1920s. It was to be rediscovered during the late 1930s and 1940s, when developments elsewhere in economics forced the Austrians of the time to reassess what both they and others were talking about with respect to “neoclassical” economics.

17.2 CARL MENGER'S SUBJECTIVIST MARGINALISM

The distinctly Austrian strand of the marginalist revolution begins with Carl Menger's path-breaking *Grundsätze*, or *Principles*, published in 1871. Like others of his time, Menger was steeped in the tradition of the older German historicists, and it is fairly clear that the *Principles* was Menger's attempt to bring that tradition forward. It is of note that the book is dedicated "with respectful esteem" to Wilhelm Roscher, then perhaps the leading thinker of the historical school. The final two paragraphs of the preface are a tribute to his German predecessors, where he refers to his own contribution as a "reform of the most important principles of our science" that is "built upon a foundation laid by previous work . . . of German scholars" (Menger, [1981] 1871, p. 49). He also goes to some length in the preface to make it clear that he wishes to claim that economic phenomena conform to "definite laws" and that the outcomes produced by economic activity are "entirely independent of the human will" (Menger, [1981] 1871, p. 48). The very first paragraph of the first chapter is a discussion of cause and effect, suggesting that he was attempting to counter the worst tendencies of historicism – namely, the idea that one can try simply to collect data and draw conclusions from them without the aid of some universalistic theoretical framework. From the start, Menger saw himself as building on and "reforming" the historicist tradition.

What would such a reform mean, particularly if his invoking of cause and effect suggests a critique of historicism? One reading is that Menger saw himself as providing the theoretical framework necessary to do the sort of detailed, applied economics so valued by the historicists. A detour into Menger's (1985 [1883]) other book on methodology (the *Investigations*) would take us too far from the topic at hand. However, it is worth noting that Menger (see also 1981 [1871], p. 47) was fairly clear in dividing up the tasks of economics into the theoretical (which dealt with laws) and the applied (where those laws were used to synthesize facts of the world into causal-genetic explanations of the emergence and evolution of economic and social phenomena). The rationale for theory is the doing of history, and the doing of (good) history requires a theoretical framework. To that degree, Menger appears to have seen himself as extending the ability of the historicists to do what they thought was right by providing them with the analytic framework he believed that they were missing.

Although the *Principles* is not focused on responding to English-language debates, it is clear in several places that Menger wished also to demonstrate the errors of that tradition with respect to its cost of production value theory. Friedrich von Hayek reports that Menger wrote the *Principles* in a "state of morbid excitement," suggesting that he had seen how he could both push forward his own tradition and respond to the theoretical difficulties the classicists had run into with cost-of-production theories of value (Hayek, 1981, p. 16).

17.2.1 The theory of goods

One notable aspect of Menger's presentation of marginal utility is that his discussions of value and the importance of the margin are not how he begins. Rather, he starts by defining what is meant by a good and how different sorts of goods might interrelate. These two discussions are important for Austrian marginalism as they bring to the fore several central themes. Menger (1981 [1871], p. 52) argues that a thing must meet four requirements to be considered a good:

- 1 There must be a human need for the thing.
- 2 The thing must be "capable of being brought into a causal connection with the satisfaction of this need."
- 3 Humans must know of this causal connection.
- 4 We must have enough command over the thing so that we can use it to satisfy the need.

Other than the second condition, which arguably refers to properties of the object itself, the conditions listed by Menger center not on the thing itself but on its relationship to humans. He speaks of human needs, human knowledge, and our ability to command the thing in question. From the start, Menger makes these concerns central to his conception of economics. As he later argues about value, what makes something a good is not a property of the good itself "but merely a relationship between certain things and men" (1981 [1871], p. 52, fn. 4). Ascribing the characteristic of being a "good" to the relationship between a thing and human beings is reflective of the distinctly subjectivist character of Austrian marginalism.

How far Menger was willing to carry that subjectivism is tested early on by his own example of "imaginary goods" (1981 [1871], p. 53). His example is a good where people *believe wrongly* that there is a causal connection between the good and the need, or where the need itself is not real. These things would remain "goods" but get their own category as "imaginary." Although distinguishing imaginary goods makes sense given Menger's four characteristics, it is worth asking, as von Mises (1976 [1933]) did, whether from an *economic* perspective this difference matters. If the goal is to explain observed market phenomena, then it will be what people believe about goods that will be the basis of their action in the marketplace and the social outcomes that they contribute to producing. The issue of whether the causal connection or the need is real is irrelevant, argued later subjectivists, to the economic analysis. Thus, despite the very subjectivist nature of Menger's version of marginalism, he did not necessarily extend it to its logical limits.

One of Menger's central contributions is the concept of the "ordering" of goods. He distinguishes among goods of various "orders," with goods of the "first" order being those that go directly to the consumer, and goods of "higher" orders being the inputs that go into making goods of the first order. As he (1981 [1871], p. 57) notes, goods of the higher orders are still goods because they still have a

causal connection with satisfying a human need, even if that connection is an indirect one (via the good of the first order). This distinction among the orders of goods has two important roles within Austrian marginalism. First, it is a further example of the way in which the economic characteristics of goods are not inherent in the goods themselves, but in the ways in which humans make use of them. As Menger points out, what makes a good into a good of a particular order is not the physical properties of the good, but where it sits in the causal relationship with the satisfaction of a given human need (1981 [1871], p. 58). The same piece of bread might be a good of the first order when bought to make a lunch in a household, but a good of the second order when purchased by a restaurant to make a sandwich it sells to its customers. Despite being the same physical object, its economic importance depends on how it is used.

The importance of goods within human uses raises the second role that the ordering of goods plays within Austrian marginalism. Implicit in Menger's discussion of the ordering of goods is the idea that human actors formulate plans, and that the goods in question play roles within those plans. The reason why objects with the same physical properties can be goods of differing orders is that they play different roles in differing human plans. The piece of bread figures in the plan of the family residing in the household in a different way than it does in the plan of the restaurant owner. The centrality of "the plan" to Austrian thought was most fully developed by Ludwig Lachmann (1978 [1956]) more than 75 years after Menger, but the concept is there from the start.

The ordering of goods within human plans is also the foundation of the Austrian theory of capital and the related question of imputation. In the hands of Böhm-Bawerk and Wieser, these issues would be explored more completely. Menger did have much to say about the complementary nature of capital in the production of goods of the first order. He (1981 [1871], pp. 62–3) argues that for a second-order good to keep that goods-characteristic there must be available the goods complementary to it in the production of the first-order good in question. If those complementary second-order goods are not available, then the good in question loses its good-characteristic, because we have lost command of the goods necessary to produce the final good. We might have the need, the knowledge, and the physical capability, but we do not have the goods that we need to effect production of the final good. Menger also argues that the goods-characteristic of higher-order goods "derives" from the goods-character of the final good. Should the desire for some final good disappear, it would no longer be a good, as would also be true of all those higher-order goods used in producing it that could not be transferred to some other use. It is the subjective evaluation of final goods that determine whether or not the inputs needed to produce those goods are themselves economic goods.

17.2.2 Knowledge, time, and error

Embedded in Menger's conception of economic goods is the role of human knowledge, of both human needs and the causal connections between things and those needs. Once one stresses the importance of knowledge, one must take seriously

the role of time and the possibility of error. Menger's earlier example of imaginary goods already suggests that error can play a role at the level of goods of the first order. However, he is also concerned to note that production processes take time, and where time passes, uncertainty is relevant and error can result. Menger (1981 [1871], p. 68) argues that the needs that give higher-order goods their goods-character must therefore not be the needs of today, but the needs of the future, at the point when the production process is complete. In other words, what makes them goods is the "human foresight" involved in bringing together various higher-order goods in anticipation of the needs of the future (cf., Kirzner, 1973). Once we recognize this point, then the uncertainty involved with the passage of the time means that our foresight is necessarily imperfect. The starting point of the economic process is the subjective plans of individuals, which are in turn based upon their own foresight about the future. In the Austrian version of marginalism, such plans can, and will often, be erroneous, leading to the readjustment of plans and further economic activity. This ceaseless flux of the market is characteristic of the disequilibrium orientation of the early Austrians.

17.2.3 Subjective value and Menger's margin

As Streissler and Jaffé have argued, not all versions of the marginalist revolution were the same, and the distinct contribution of Menger's marginalism was its subjectivism. Human beings are the ultimate source of economic value. Menger first makes this point by distinguishing "economic" from "non-economic" goods (1981 [1871], pp. 94–113). The distinction rests on whether or not the available quantity of the good is less than or greater than the human needs for the good. Economic goods are those where needs are greater than available quantities, necessitating that we "economize" on them. It is that process of economizing that forms the basis of Menger's exploration of value.

Menger defines value as "the importance that individual goods or quantities of goods attain for us because we are conscious of being dependent of command of them for the satisfaction of our needs" (1981 [1871], p. 115). Human "consciousness" is the key to value, in that our awareness of the linkage between an object and its ability to satisfy a need is what gives goods value. Our being "conscious" need not mean we are correct about that linkage. As Menger (1981 [1871], pp. 120–1) says later, "Value is thus nothing inherent in goods, no property of them, nor an independent thing existing by itself. It is a judgment economizing men make about the importance of the goods at their disposal for the maintenance of their lives and well-being." Human judgment is now substituted for being "conscious." We decide, using our judgment, whether things are believed to satisfy a need; thus we give them value. Value is therefore "entirely subjective in nature" (Menger, 1981 [1871], p. 121). This judgment of value is subject to the same sorts of concerns about time and error that we noted in the previous subsection.

For Menger, the subjectivity of value is what underlies his discussion of marginal utility. It is only after he has defined value that he moves on to talk about utility. In defining utility, he simply refers to it as "the capacity of a thing to serve for the satisfaction of human needs, and hence (provided the utility is recognized)

it is a general prerequisite of goods-character" (1981 [1871], p. 119). In Menger's conception of marginalism, utility is not understood as a cardinal value that can be totaled up, nor is it even anything "measurable" in any meaningful way. It is, as Menger notes, understood as a "capacity," and one that is in the eye of the beholder. Utility is *not* the same as value, as value can only be applied to economic goods. Utility is therefore necessary for value, but it is not sufficient. Noneconomic goods have utility but not value, as they do not figure into the economizing decisions that humans make. More precisely, noneconomic goods are ones where "the satisfaction of human needs does not depend upon the availability of concrete quantities of [them]" (1981 [1871], p. 119). Noneconomic goods such as air do not have to be judged in terms of specific concrete quantities; rather, they are omnipresent in some sense.

It is around this set of points that Austrian marginalism departs from the other strands. For example, for Jevons, total utility was understood as some summable quantity (in the tradition of the English utilitarians) determined by a functional relationship with other variables, and marginal utility was simply the first derivative of that total utility function. For Jevons (and Walras), the "marginal" in "marginal utility" had a clearly mathematical meaning. For Menger, the notion of the margin was understood in different terms. As Hayek (1981, p. 18) points out, Menger does not even use the phrase "marginal utility" in the book, as it was first used in the Austrian tradition by Wieser. Instead, Menger had to resort to circumlocutions like those in the paragraphs above, particularly his references to "concrete quantities" of goods. By adding to the definition of value that is cited from Menger earlier ("the importance that individual goods or quantities of goods attain for us because we are conscious of being dependent of command of them for the satisfaction of our needs" – 1981 [1871], p. 115), the notion that we are talking about "concrete quantities" available for satisfying the "least valuable" of our needs, we obtain a Mengerian concept of marginal utility. In a later passage, Menger says:

Accordingly, in every concrete case, of all the satisfactions secured by means of the whole quantity of a good at the disposal of an economizing individual, only those that have the least importance to him are dependent on the availability of a given portion of the whole quantity. Hence the value to this person of any portion of the whole available quantity of the good is equal to the importance to him of the satisfactions of the least importance among those assured by the whole quantity and achieved with an equal portion. (1981 [1871], p. 132)

This passage captures the essence of the Austrian version of marginal utility. "Menger's margin" involves a notion of "marginal" that is clearly ordinal and not cardinal. Beyond that, it does not refer to the first derivative of a hypothesized utility function. Utility, for Menger and the Austrians more generally, is not a measurable quantity of pleasure (White, 1995). Utility is the "capacity," ascribed to a good by humans, to satisfy some need, not the hedonic sensation that a good produces when it satisfies that need. Thus, the "marginal utility" of a good is the capacity of a "concrete quantity" of that good to satisfy the least

important specific need that it can satisfy. Faced with several buckets of water and several possible uses of that water (bathing, human consumption, animal consumption, and washing clothes), the marginal utility of water will be equal to the value of the least important of those needs that it is believed to have the capacity to satisfy. It is not a “feeling,” nor is it the first derivative of a total utility function. It is the value attached to the specific need fulfilled by the specific amount of a good believed to have the capacity to satisfy that need. Only a few pages after the extracted definition above, Menger deploys it to solve the water–diamond paradox. As he (1981 [1871], p. 140) puts it there, the need that would be unmet by the loss of a concrete quantity of water would be of far less importance than that of the need unmet by the loss of a concrete quantity of diamonds, as diamonds are so few in quantity compared to water.

The Austrian conception of marginal utility marked out a very different path than did that of Jevons and Walras. Rather than pursuing the calculus-based notion of the margin, and the various equilibrium models that it enabled economists to construct, the Austrians continued to understand economizing behavior in terms of subjective judgments about specific goods and needs in a world full of error and uncertainty. Mengerian man was never the Veblenian “lightning calculator of pleasures and pains”; rather, he was more like a sailor headed into a fog with a pretty good searchlight. He can see some things, but not others. He is also likely to bump into a few things that he could not have possibly been prepared for. And he does not know what he does not know. This Austrian conception of marginal utility leads fairly naturally to the emphasis on disequilibrium and discovery that marks the research agenda of modern Austrian economics since World War II. It also demonstrates, as Karen Vaughn (1990) has argued, that the rediscovery of what was distinct about Austrian economics during the late 1930s and 1940s in the work of Hayek and von Mises, and then again in the 1970s and 1980s with the Austrian revival, was really a journey back to roots of Austrian marginalism found in Menger.

17.2.4 The flow of value

Another crucial component of Austrian marginalism is the discussion of the flow of value and the concept of “imputation.” Given the Austrian conception of value, and its subjectivist foundation, exploring the relationship between the value of the inputs and the value of an output was a straightforward proposition. In opposition to classical cost-of-production theories, where value flowed in the same direction as production, the Austrians argued that value flowed in the direction opposite of production. Rather than the inputs determining the value of the outputs (the same direction as production), it was the value that human beings ascribed to the outputs that determined the value of the inputs. The value of the inputs was “imputed” from the value of the outputs. As Menger (1981 [1871], p. 150, emphasis added) put it, with a particularly Austrian flavor, “On the contrary, it is evident that the value of the goods of higher order is always and without exception determined by the *prospective* value of the goods of lower order in whose production they serve.”

The emphasis on “prospective” is the particular Austrian twist. Menger recognized from the start that the value of inputs was not something that could be ascertained deterministically. Knowing the current prices of outputs is not enough to determine the value of inputs, because the value of inputs depends on not the current prices of outputs, but the prospective prices, as envisioned by entrepreneurs. Those prospective prices are ultimately produced by the active minds of those entrepreneurs. This point is important because it once again suggests that the Austrian version of marginalism is not easily captured by equilibrium constructions. If the valuation of inputs is based on entrepreneurs’ expectations of the value of outputs, then if and only if those expectations are mutually consistent and correct can the economy be characterized by equilibrium. In a Mengerian world in which subjectivity, uncertainty, and error are omnipresent, those conditions are unlikely to be met. Thus, input valuation is a competitive, disequilibrium, process. The ongoing clash of entrepreneurial judgments will constantly evaluate and reevaluate those inputs in nondeterministic ways. In addition, that process of imputation is institutionally dependent, in that only where certain institutional arrangements hold that allow entrepreneurs to compete in the formulation of production plans using privately owned capital will there be any assurance that inputs are being valued appropriately with respect to the value of output.

This point is central to Hayek’s (1945) criticism of Schumpeter’s understanding of the relationship between imputation and calculation under socialism. Hayek points out that Schumpeter’s argument that even the socialist planner can impute the value of the inputs from the value of the outputs is true only if one assume that equilibrium holds. He also argues that the whole process of evaluation itself requires a competitive market order. Given that it is the prospective value of outputs that determines the value of inputs, it is only through the aforementioned clash of entrepreneurial expectations that the inputs get any value at all. Absent private property in capital, there is no way for them to be valued, from an Austrian perspective.

The Austrian emphasis on the structure of production and Menger’s conception of the value of inputs being based on the prospective value of the outputs they produce leads to a further difference between Austrian presentations of marginalism and the Jevonian and Walrasian presentations. In the more equilibrium-oriented versions of marginalism, prices are seen as the independent variables into the utility and production functions of actors, who then generate particular quantities consumed and produced as the dependent variables. The problem is to find the set of prices that will produce mutually consistent production and consumption choices. Although the *theorist* searches for a set of prices, the actors modeled are assumed to take those prices as given and to churn out quantity variables as a result.

In Menger’s vision, prices are not independent variables; rather, they are the emergent result of the competitive economizing process we have described above. The order that Menger chooses to present his argument puts the theory of price in chapter five, well more than halfway through the book. It is the forward-looking consumption and production activities of economizing actors that produce prices: thus Menger has to describe carefully those economizing processes before

he turns to the theory of price. Even there, how prices emerge depends up on the degree of competition among the buyers and sellers. He starts with price formation under “isolated exchange” (what we might call “bilateral monopoly”) and ends with a discussion of price formation under “bilateral competition.” He notes how the range of possible market-clearing prices will be much narrower as the degree of competition on both sides increases (Endres, 1995). For Menger, it is also the case that this movement from bilateral monopoly to bilateral competition is part of the process of economic development and growth. Monopoly is seen as an early stage of development, with more rich competition being a sign of economic well-being (O’Driscoll, 1981).

17.2.5 Spontaneous order and Menger’s marginalism

One overriding theme in Menger’s Austrian marginalism is what Hayek would later term “spontaneous order.” Economic phenomena emerge unintentionally from the economizing activity of human beings. We, as Menger argues, only aim to do the best with what we have, whether as consumers or producers, and in so doing, we set in motion chains of causality that produce economic value, market prices, and broader patterns of economic activity. These are the causes and effects that Menger begins the text with, as his way of improving on the work of his historical school predecessors. The very structure of the *Principles*, which puts prices and the emergence of money well into the argument, suggests the sort of causal-genetic explanations that Menger is interested in. It is these sorts of explanations that Menger thinks the earlier parts of the book make possible. One needs to understand marginalism correctly in order to be able to offer sound spontaneous order explanations. If such explanations view human institutions and economic phenomena as “the product of human action but not human design” in Adam Ferguson’s phrase co-opted by Hayek, then marginalism is the key to understanding the “human action” part of that formulation. The more strictly methodological arguments raised in the *Investigations* are further support for this interpretation.

Menger’s theory of the origin of money is often pointed to as the exemplary spontaneous order explanation. Menger included that theory in the *Principles* and it follows his discussion of prices and the “commodity.” This suggests that he sees the emergence of money as part of the same pattern of growth that animates his discussion of prices. In addition, he follows the discussion of the theory with a history of money, describing its uses in various eras and linking that to economic development more broadly. Having thoroughly described economizing behavior with the assistance of his notion of the margin, he can then move on to elucidating the emergence of economic institutions, such as money, and then use all of that to engage in the sort of historical analysis that his German predecessors valued so highly. He ends the *Principles* with the discussion of money not just because he needs the earlier theory to construct the theory of money’s origin, but because it gives him the opportunity to show his own teachers that his theoretical advances enable him to tell *better* historical “stories” than they can. He goes to the length of describing how certain types of money

are appropriate to certain particular historical eras (1981 [1871], pp. 262–71), which is precisely the sort of work that the historical school believed was so valuable. Menger too is interested such historical work, but appears to believe that it cannot be done (or at least not done well) without the theoretical tools of marginalism. If economic history is to be rendered intelligible, it will have to be through causal-genetic stories that begin with the economizing behavior of the human actors.

That the project of Austrian marginalism is to use a revised economic theory to offer causal-genetic interpretations of economic history is also clear from later work in the Austrian tradition. In a striking section of his *Human Action*, von Mises (1966 [1949], p. 405) discusses the “epistemological import” of Menger’s theory of money. There he argues that the theory is to be taken as a sort of template for the methodology of economics, which is to construct such spontaneous order explanations of economic phenomena. It is worth noting that von Mises’s discussion takes place not in the early methodological sections of the book, but later when he is into the material on what we would today characterize as “microeconomics.” This is another example of Vaughn’s (1990) claim that the revival of Austrian economics since World War II has involved a rediscovery of Mengerian themes. More generally, Menger’s vision of marginalism and the task of economic theory was clearly different from that of the other marginalists.

17.3 WIESER’S EXTENSIONS OF AUSTRIAN MARGINALISM

Wieser’s contributions to the marginalist revolution were numerous. They also represent a movement of the Austrians toward the marginalism seen in the other strands of the revolution. Here, we shall focus on two aspects: his contributions to value theory and his extension of Menger’s fragmentary remarks on imputation. What we shall see is that Wieser’s work helped to create a more unified and homogeneous body of theory that defined the marginalist revolution. By the time both he and Böhm-Bawerk had articulated their advances on Menger, the distinctiveness of Menger’s work was beginning to be lost in the merging of the various strands of marginalism.

With respect to value theory, Wieser clarified the nature and importance of the “margin” for determining value. In his *Natural Value* (1956 [1889]), he explored in great detail what it meant to say that it was the utility of the least important use to which a homogeneous stock could be put that determined the value of any one unit of that stock (e.g., the buckets of water example from above). Wieser made use of a simple mathematical model to illustrate this point. That model also enabled him to distinguish between “utility” and “value,” where value referred to “revenue.” His model described how as the number of goods exchanged increased, the price per unit would fall (consistent with Menger’s utility theory) and that the increase in utility from each good consumed would eventually become less and less. In addition, the total value/revenue received by the seller would not only add smaller increments, but would in fact decline in absolute terms as the price received fell with the sale of additional units. In essence,

Wieser plotted out the total utility and total revenue curves familiar from modern microeconomics.

Wieser assumed that the price paid for the marginal unit of the good would equal its utility to the consumer. So if one were to buy three units of a good, the total utility would equal the price one would pay for one unit, plus the price one would pay for a second unit, plus the price one would pay for a third. Note that this is not the same as the total expenditures/revenue that would come from the exchange of three units at a single market price. Wieser was really adding up the area under the demand curve, and he assumed that the demand curve also reflected utility. One of the core implications of the model was that total revenue would continue to rise as long as the utility (i.e., price) of the incremental unit sold was greater than the receipts lost by having to lower price on all units. Again, this is the inverted U-shaped marginal revenue curve. Wieser's contribution was not only to lay out those conditions carefully, but to link them to value through the assumption that the value of the marginal unit was equal to its market price.

One of Wieser's additional contributions to value theory was that he was first among the Austrians to actually use the term "marginal utility" to describe the value of the least important end to which a homogeneous stock was put. As the mathematical model discussed above suggests, Wieser was moving more toward the presentation of utility that was seen in the English and French marginalist traditions. As Vaughn (1994, p. 34) notes, Wieser placed Menger with Jevons, Walras, and Gossen as co-discoverers of the marginalist insight, without directly making any distinctions among them. In particular, his more utilitarian approach to utility, where he assumed, at least for the sake of convenience, that it could be summed into a total utility curve, represents an attempt to bring together Menger's work with that of Jevons. Thus, his use of the shorthand of "marginal utility" seems appropriate in a way that it might well not have been for Menger. The mathematics surely help to clarify aspects of utility theory, but do run the risk of losing some of the distinctive Austrian insights found in Menger's work.

In his later book *Social Economics*, Wieser makes use of the phrase "margin of utility" to describe Menger's concept of the least important use being the one that determines the value of any unit of a stock (Wieser, 1967 [1914], p. 88). That phrase has been lost from value theory in general and Austrian value theory in particular, which is unfortunate as it seems an effective way of getting around the circumlocutions of Menger and the potential misreading of Menger's contribution that can come from the more mathematically oriented "marginal utility."

Wieser's work on imputation is generally considered to be among his more important contributions to the development of economic thought. Here too, although he develops some essential Mengerian insights, he moves them in a direction that brings them closer to the other strands of marginalism. Wieser sharpens the Austrian view that it is the marginal utility of consumer goods that determine the value of the inputs that produce them. For one thing, Wieser argued that, at least where all resources are being utilized optimally, the value of the input will depend upon the various outputs that it could contribute to producing. Specifically, it will be the value of the least important good that it will

produce that will determine the value of the input. In much the same way as the value of a consumption good is determined by the least important end to which it could be allocated, so the value of inputs depends upon the marginal output they could help to produce. Even more specifically, Wieser argued that value will depend upon both the marginal productivity of the input and the marginal utility of the output, rather than the marginal productivity and the *price*, as is the case in modern theory. It is also worth noting that in Wieser's Austrian presentation, there is no distinct role for "supply" in determining value. Inputs are valued by the marginal utility attached to what they produce, with opportunity cost determining the least important use. This is very much an Austrian point deriving from Menger: it is the actions of economizing actors that determine value of both outputs and inputs.

In developing the formal model for imputation, Wieser had to make two assumptions that pushed the analysis somewhat away from Menger's original perspective. One of those was the assumption of fixed proportions across production functions. This clearly makes the mathematics more tractable, but may not describe reality particularly well. Real-world entrepreneurial competition may be constantly discovering new methods of production that violate the fixed proportions assumption.

The second assumption is more important. Wieser assumed that the economy was in equilibrium, implying that the values of inputs could be calculated simultaneously. This assumption runs up against Menger's emphasis on causal-genetic explanations and the role of entrepreneurial expectations. For Menger, those input prices emerged out of the competitive process of entrepreneurs' forward-looking evaluations. This suggests that, at any moment in time, inputs may not be optimally allocated and that simultaneous equilibrium models will not be applicable. Wieser's work on imputation was important in clarifying the fact that it is the value of the outputs that determine the value of the inputs, but his decision to portray that as a simultaneous equilibrium model, though necessary for the mathematics, is one that took the Austrian strand of marginalism away from Menger's subjectivism and closer to that of Jevons and Walras.

17.4 BÖHM-BAWERK ON CAPITAL

A similar story can be told about Böhm-Bawerk's contributions to the Austrian strand of marginalism. His work on exchange forwarded Menger's marginalism, as did his contributions to capital theory. Böhm-Bawerk's (1922) famous horse market example made very clear the role of the marginal buyer and seller in determining the market-clearing price under conditions of bilateral competition. Specifically, that example drew important conclusions for doing exchange analysis with discrete supply and demand functions. Later neoclassical development of this work assumed an infinite number of buyers and sellers, or at least enough to treat both functions as continuous. In this sense, Böhm-Bawerk's analysis was an extension of Menger's focus on real human action (discrete buyers and sellers), rather than a calculus-oriented conception of utility. However, Böhm-Bawerk's

capital theory also contained elements that worked against the subjectivist thrust of Menger's work. Here, as with Wieser, those elements worked toward the gradual crystallization of a more homogeneous neoclassical marginalism, while at the same time hiding what was distinct about the Austrian strand. That aspect of Böhm-Bawerk's capital theory demands distinct attention.

Two important advances that were part of Böhm-Bawerk's capital theory were the idea of the "roundaboutness" of production and the time-preference theory of the interest rate. Both of these were related to his theory of capital and were grounded in the subjectivism of Menger's marginalism. Roundaboutness referred to the fact that longer (more "roundabout") methods of production would generate more final output than shorter, less roundabout, ones. The key to this argument was that longer production processes, those that involved more "stages," enabled the increased use of capital (what Böhm-Bawerk called "produced means of production"), which would make the final output greater than otherwise. Longer production processes used more capital, creating higher capital to labor ratios, thus generating more output (although with diminishing marginal contributions).

Böhm-Bawerk's theory of interest is also a very important extension of Mengerian subjectivism. For Böhm-Bawerk, the payment of interest was clearly linked to capital, and capital, as we have seen, had a distinct time element to it. Why, then, did capital earn interest? Böhm-Bawerk's answer was that interest originates from the fact of human time preference. Humans, all other things equal, value the present more than the future. In order to get people wait for output in the future, they require additional compensation when that output arrives. Notice that this is consistent with the roundaboutness hypothesis: lengthening a process of production requires paying more interest to those who are waiting for the output, but such production processes also produce more output. Longer processes of production mean a longer period of time in which some people must go without output. Those who are being asked to wait longer (those who "financed" the production process) will require more compensation for their reduced ability to consume in the interim.

Böhm-Bawerk offered a number of reasons why we prefer the present to the future, but the one he put the most weight on was the fact that present goods were better able to satisfy human wants than future ones. Böhm-Bawerk links this to the roundaboutness hypothesis by arguing that starting a production process now will always generate more output than starting one in the future. However, one can also argue that the advantage that present goods carry is due to the sort of uncertainty that Menger identified in the *Principles*. One advantage of having a present good is that one can be certain about one's ability to consume it. Any future good inherently carries uncertainty with it, as events might intervene to prevent one from being able to consume it. All other things equal, present goods will thus be preferred to future ones. Although Böhm-Bawerk himself did not make this connection explicitly, it reflects another sense in which present goods are better able to satisfy human wants than are future goods.

It is also important to clear up a common misconception about Böhm-Bawerk's time-preference theory of the interest rate. This theory is intended only to explain

the *origin* or the *existence* of interest, not the interest rate at any given moment in time. Market interest rates include the time-preference component, but also factors such as risk and inflation. Market rates will vary for reasons other than changes in time preferences. However, if one's goal is to explain why interest emerges at all (the Mengerian "essence" of interest), then one has to turn to the fact of time preference. This fits the Mengerian research agenda as well, as it provides a theoretical framework with which to look at actual market rates.

One of the problems with Böhm-Bawerk's theory is determining precisely what is meant by the "period of production," which might be used to measure the degree of roundaboutness in any production process. In his model, the flow of inputs was continuous, but outputs occurred at distinct points. Examples from nature where inputs are continually applied but the output "ripens" at particular moments in time capture the theory well. But with the continuous flow of inputs, what was the period of production? Suppose that one wanted to make something out of wood. The point of final output can be determined, but does the "period of production" extend all the way back to the seed that grew the tree 100 years earlier? If roundaboutness was to be measured by the period of production, Böhm-Bawerk seems to have a problem in determining precisely how to measure it.

Böhm-Bawerk tried to get around this problem by making use of an "average period of production" concept. He argued that one could weight the inputs according to how proximate they were to the final output. By summing these inputs, weighted by the number of periods they were used and then dividing through by the total number of inputs, one could calculate an "average" period of production. This was a significant move away from Mengerian subjectivism, as it necessitated that he assume that all inputs were homogeneous. It also forced him to assign weights somewhat arbitrarily – How could one know whether an output was more or less attributable to relatively recent or more distant inputs? What the "average period of production" concept overlooked, as was the case with Wieser's work on imputation, was the fact that the values for inputs were being determined by the subjective evaluations of entrepreneurs in a competitive market process. Finding an objectively definable average period might be useful to the theorist, but it was irrelevant to the entrepreneurs actually doing the valuing of inputs. All of the questions that the average period must answer are ones that cannot be answered "objectively" for any given production process. Entrepreneurs must compete through the use of monetary calculation to determine the values of those inputs and to determine the proper accounting of periods of production and contributions to output.

The average period of production concept was abandoned by later Austrian capital theorists (e.g., Hayek, 1941), and appropriately so. According to Schumpeter (1954), Menger called Böhm-Bawerk's use of the average period of production in his theory of capital "one of the greatest errors ever committed." However, Böhm-Bawerk's other contributions to capital theory that were more consistent with the distinctly Austrian strands of marginalism, in particular the time-preference theory of the interest rate and the notion of roundaboutness, were picked up and expanded upon by later generations of economists, both Austrian and otherwise.

Despite the flaws noted here, Böhm-Bawerk's work on capital is one of the enduring contributions to economic theory made by the Austrian marginalists.

17.5 CONCLUSION

The contributions of the Austrian marginalists represent both a distinct tradition in modern economics and a part of the family tree that comprises the consensus around which twentieth-century microeconomics was constructed. The consistency in those two characterizations is captured by the fact that the distinctiveness of the Austrian strand progressively began to weaken with the second and third generation of Austrian thinkers. As this chapter has argued, Wieser and Böhm-Bawerk surely pushed forward important ideas of Menger, but in some cases they did so in ways that left behind aspects of Menger's work that were notably different from those of his co-discoverers, Jevons and Walras. By the interwar years, that distinctiveness was largely gone, even in the eyes of the then-current generation of Austrian economists. It is only in the period around World War II and after that those original Mengerian themes began to be rediscovered and a distinctly Austrian version of marginalism began to be rearticulated. With the ongoing emphasis in modern microeconomics on questions of knowledge, information, and disequilibrium, and the push toward pluralism in economic methodology, the ideas and approaches of the Austrian marginalists remain of contemporary interest.

Note

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