

# The Austrian School of Economics and the Implications of Subjectivism<sup>1</sup>

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## Introduction

[I]t is probably no exaggeration to say that every important advance in economic theory during the last hundred years was a further step in the consistent application of *subjectivism*. That the objects of economic activity cannot be defined in objective terms but only with reference to a human purpose goes without saying. Hayek, 1955: 52-53, *italic added*)

We are not here concerned, however, with the specific problems of economics, but with the results of conscious human action. The points which start from what men think and mean to do: from the fact that the individuals which compose society are guided in their actions by a classification of things or events according to a system of sense qualities and of concepts which has a common structure and which we know because we, too, are men; and that concrete knowledge which different individuals possess will differ in important respects. Not only man's action toward external objects but also all the relations between men and all the social institutions can be understood only by what men think about them. Society as we know it is, as it were, built up from the concepts and ideas held by people; and social phenomena can be recognized by us and have meaning to us only as they are reflected in the minds of men. (Hayek, 1955: 57-58).

Many works exist explaining the origins and development of the Austrian School of Economics (for example Vaughn, 1994), so this need not be dealt with here. Rather, my specific focus will be on the meaning and implications of subjectivism, for economics and social theory in general.

As the two quotations from Hayek above make clear, what started with Menger in 1871 as a discourse about the origin and meaning of "value" has significant implications for social-science in general. The subjectivism of value shapes the way in which we are bound to investigate human action and interaction, namely, through *understanding* the minds of our subjects, their purposes and the means employed to achieve them. Moreover we are bound further to explore this in terms of the way acting individuals come to understand their own purposes and the means to their achievement, that is, through the shared mental constructs that emerge from what we normally think of as *social institutions*. And, in this investigation, we are aided by the fact that we share with our subjects their humanity, the structure of their brains, the mode of their thinking. Yet, this method of study does not, cannot, yield knowledge of kind that will allow us to predict the concrete unfolding of human events. This is because, the centrality of the human mind and the knowledge that it contains being at the wellspring of all human action, establishes firmly the importance that individuals, and their idiosyncratic expectations, play in the decision making process, leading us to the inexorable conclusion that neither we, nor the acting subjects we study, can have perfect knowledge of the future. Expectations are bound to be disappointed. Errors are part of life, and they cannot be fully known before their occurrence.

From the subjectivism of value to the subjectivism of expectations, and in-between, lies the rich heritage of the subjectivist revolution that was started by Menger in 1871 and is not yet concluded.

We begin with an outline of the key players in this revolution.

## The Austrian School of Economics: *Dramatis Personae*

### Carl Menger – value is subjective

Subjectivism is an idea that extends beyond economics into philosophy and sociology and beyond, and there appears little doubt that the influence of the economist Carl Menger was foundational in this regard.

In his two major works (1871, 1883) Menger grappled with the subjectivism of value<sup>2</sup> and the implications of this for scientific investigation in the social sciences. Menger is immortalized within the mainstream of economics as a member of the troika of Menger, Leon Walras and William Stanley Jevons, who, independently, “discovered” marginal utility, thus resolving the mystery of the origin of value (aka. the diamond-water paradox), and produced the neoclassical or marginalist revolution which changed economics forever. In significant respects, however, Menger’s contribution was more radically subjective than that of his revolutionary coincidental teammates (see Jaffe, 1976), and because of this, he is known as well, and more importantly, as the founder of the Austrian School of Economics. The most important identifying aspect of the Austrian School is the rigor with which it embraces the subjectivism of value and subjectivism more generally.

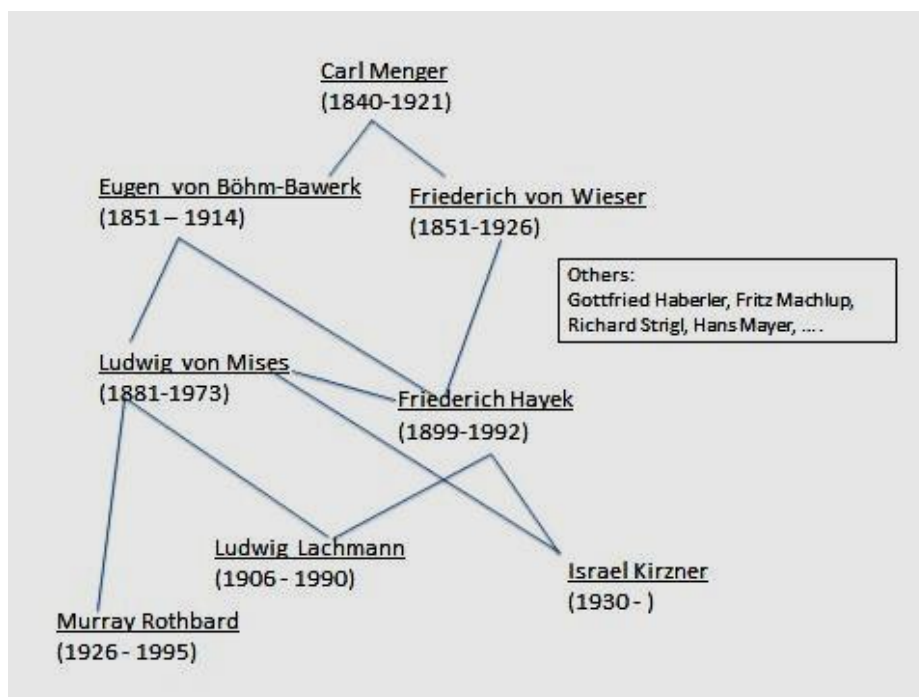


Figure 1: The Austrian School of Economics from inception to the third generation.

In a discussion of subjectivism, two important aspects of Menger’s foundational work deserve emphasis. First, the neoclassical economists have never fully appreciated the implications of the

<sup>2</sup> "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. Hence value does not exist outside the consciousness of men." Menger, 1951, p. 121.

subjectivism of value for their subject, and have departed dramatically from the path along which his insights pointed. This has become even more manifest in the current period. Modern economic discourse, while jettisoning the classical presumption that value was determined by costs of production, and embracing the truth that all value derives from the (subjective) appraisals of consumers of produced goods and services, have stopped short of facing up to the full implications of the subjectivism of value. To do so would be to admit the problematic nature of much of modern economic discussion and research. For example, the subjectivism of value points directly to the notion of opportunity cost as the (imagined) value lost by the decision-maker in choosing one course of action over another. More specifically, it is the value of the most valuable alternative given up by the choice made. As such, opportunity cost, which is acknowledged by economists generally to be the only valid conception of cost, will vary with decision-makers' appraisals of the alternatives sacrificed and the individual valuations of said alternatives; there will be as many "costs" as there are decision-makers, which explains how it is that different people, appraising the same reality, will often form very different economic assessments of any given prospect.<sup>3</sup> Modern economic practice finds this inconvenient and tends to avoid dealing with such disparate appraisals by assuming that all the relevant decision-makers share common knowledge and draw the same conclusions about value. This, in effect, negates the significance of subjectivism in economics; it surreptitiously retains the fallacies of objectivist classical economics. I will expand on this below.

The second important aspect of Menger's treatment of subjectivism concerns the claim that his subjectivist revolution was incomplete (see Lachmann, 1978) – in two respects. Firstly, Menger seemed to think that human "needs" had a sort of objective essence, so that one could objectively judge the correctness or otherwise of an individual's attempt to satisfy certain needs (Menger, 1871: 121)<sup>4</sup>. (This anticipates aspects of modern behaviorist economics). This part of Menger's work is correctly regarded as inconsistent with his thoroughgoing subjectivism, it is an aberration, and has been mostly disregarded by the members of the Austrian School.

Secondly, Menger's subjectivism of value has profound implications for the methods appropriate to and the potential of investigation in the social sciences. This is the subject of Menger's second seminal work, *Investigations* (1883), the work that provoked that hostile reaction in his academic contemporaries in Germany that became known as the *Methodenstreit*. Menger articulated the different nature of 'exact laws' in the social sciences as compared with the natural sciences. In the social sciences we derive laws from our understanding of human reasoning and valuation – laws that are valid for all human societies and not bound by special historical circumstances (as contended by his Historical School opponents) (see Caldwell 2004). In this work we see the beginnings of the full-blown subjectivist study of human action, to be greatly elaborated by the later Austrians, most notably Mises and Hayek.

As Lachmann was to point out, the subjectivism of value implies the subjectivism of expectations, and while the revolutionary nature of the former is widely acknowledged, the latter is not. Though he does not explore its implications, we can justifiably claim that Menger indeed does realize the connection between subjective value and the subjectivism of expectations (1871: 67-70). As we shall see, delving into the subjectivism of expectations has resulted in the opening of a veritable

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<sup>3</sup> For an extended treatment see Buchanan, 1979.

<sup>4</sup> "Menger tells us, to be sure, that men frequently misjudge the order of their wants. But as we can only misjudge that which exists objectively, the subjectivism of our conscious minds contrasts sharply with the objective, almost physiological, nature of our wants." Lachmann 1973: 58.

Pandora's box of fruitful and alarming implications. Thus, what began with Menger did not stop with him, and although he clearly did not and could not anticipate all that would follow from his lead, in an important respect Austrian Economics, at least in its subjectivist aspects, is Mengerian economics. Let us look then at how faithfully his disciples adhered to the Mengerian subjectivist vision.

### **The first generation: Böhm- Bawerk and Wieser**

The first generation of the Austrian School following Menger consisted of the two prominent Austrian economists Eugen von Böhm- Bawerk and Frederich von Wieser.

#### ***Friederich von Wieser – value when knowledge is common***

Wieser's work (1893, 1914) is characterized by a thorough investigation of the concept of subjective value – expressed as *utility*. To Wieser we owe a thorough examination of the concepts of *marginal utility* and *opportunity cost*, now standard terms in economic theory. We owe to him also the first formal attempt to determine the value of productive inputs on the basis of the value of the outputs they produce – the so-called *imputation problem*. Wieser's solution to the imputation problem depends, however, on the assumption that the proportions in which inputs are combined to produce any output are fixed by technology.<sup>5</sup> This fixed-proportion assumption effectively empties the concept of value of its subjective character; it shifts attention away from valuation as the attaining of a subjective state of mind, and places it on the objective physical facts of production. The cost (value) of any input is thus given by the value of the output lost in employing it in its most valuable alternative production opportunity. And this is a matter of common knowledge, given that inputs are always combined in fixed, *known* proportions to produce outputs of *known* quantities and qualities. True, the *value* of those outputs has to be determined by the consumer in the marketplace, but this is not Wieser's focus. Dropping the fixed-proportion assumption would reveal the essentially subjective nature of the production decision. In a world in which input-proportions vary in a non-deterministic manner, the output foregone by choosing one production method over another is not a matter of common knowledge, nor is its value (of which there may be non-pecuniary components). In this context, the subjectivism of value implies subjective appraisal and interpretation and differences in individual expectations, matters not explored by Weiser.

Still, Wieser is probably not given the attention he deserves from later generations. His work was important in establishing the subjective nature of value and in spelling out important implications of this, even though he did not follow those implications as far as he might have.<sup>6</sup>

#### ***Eugen von Böhm-Bawerk – the connection between value and time***

Wieser's colleague (and brother in law) Eugen von Böhm-Bawerk, was probably the most well-known of the Austrian economists during his life-time and his reputation has endured. His work on capital theory is probably the most well-known contribution of the Austrian School. He completed three volumes on *Capital and Interest* (1959). But, in terms of its treatment of subjectivism, its status is ambiguous (Lewin [1999] 2011). Böhm-Bawerk builds on Menger's observation that the value of productive resources derive solely from the value of the

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<sup>5</sup> In this Wieser anticipates the subject of linear programming.

<sup>6</sup> He differed also from most of the members of the Austrian school in not accepting the classical liberal approach to economic and social policy.

consumption goods that they are employed to produce (dubbed “Menger’s Law” by Israel Kirzner) and, since production takes time, this involves the relationship between value and time. This relationship is what “capital” is essentially about. A series of joint and sequential activities, involving productive resources, must take place in order for consumption goods to be produced. These resources are capital-goods – their value is “capital” (the discounted value of their projected joint product). There is thus a structure of capital, in which capital-goods are appropriately combined to produce consumption goods over time.

Böhm-Bawerk analyzes the relationship of time and production in great detail, but not without some ambiguity. While recognizing, like Menger, the heterogeneous nature of the diverse types of capital-goods employed, implying diverse valuations based on differing expected values, Böhm-Bawerk at times seemed to engage in formalizations of “time-in-production” that relied on shared and common knowledge, thus departing from his “Mengerian” roots. Indeed, in time, Böhm-Bawerk’s work became a source for the development of theories within neoclassical formalist economics, as well as, (ironically<sup>7</sup>) for some works with a distinctive Marxian orientation. In spite of this ambiguity, Böhm-Bawerk’s capital theory is the definitive original contribution.

Similarly, on the question of the connection between value and time, Böhm-Bawerk provided the hitherto best account of this relationship as expressed in the phenomenon known as *time preference* – the (subjective) discount applied to future values. In a protracted debate with many critics worldwide he firmly established the validity of the “pure-time-preference theory of interest.” Interest is a phenomenon involving the comparison of subjective values of events occurring at different points in time. It does not owe its existence to “productivity” and it is not a payment for the use of capital (which is the rental payment for the use of capital goods). Rather interest is essentially a value phenomenon. Time preference is a necessary and sufficient condition for its existence.

Clearly both Böhm-Bawerk and Wieser made important contributions to the further development of subjectivism. Had it rested with them, however, these contributions might have faded from view within the world of economics. As mentioned, the mainstream development of economics moved away from the implications of subjectivism toward a conception of the economy as a kind of mechanism to be investigated with methods appropriate to the natural sciences. The effects of the contents of people’s minds on their actions was assumed away by positing that actors shared the same knowledge. Commonly shared information was implicitly assumed to be interpreted by everyone in the same way, leading to *common knowledge*.

## **The second generation: Ludwig von Mises, Fredrich Hayek and Ludwig Lachmann**

The upheavals of the first half of the twentieth century destroyed the base of the Austrian School in Vienna. Though a few stayed, most members of Böhm-Bawerk’s seminar, and other kindred spirits, left Vienna and spread all over the world. The two most important figures were Mises and Hayek. Mises ended up in New York (via Geneva) and Hayek in London, then Chicago, before returning at the end of his life to Europe. Lachmann, who was German, not Austrian, was a student and younger colleague of Hayek’s (Mittermaier 1992) at the London School of Economics, whence, after some brief temporary appointments in England, he emigrated to Johannesburg,

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<sup>7</sup> In other work Böhm-Bawerk was probably the most effective critic of the Marxist system of his time.

South Africa, (as chair of the economics department of the University of the Witwatersrand), where he stayed for the rest of his life. After retirement he spent one semester each year at New York University, which also afforded him the opportunity to teach at George Mason University (near Washington DC).

### ***Ludwig von Mises – reclaiming and extending Menger’s vision***

Mises was the elder statesman of this generation. His depth and breadth of scholarship is stupendous.<sup>8</sup> As might be expected some of it is controversial, in particular his work on methodology (Mises 1933, 1962). Mises devoted much effort to an examination of the nature of the subject matter in economics – what are appropriate research methods and what kinds of knowledge may we expect to get from applying them? He was an uncompromising methodological dualist – maintaining that different methods were required to investigate social phenomena and natural phenomena. But the basis for this is a matter of some dispute. Though he has been considered an extreme *apriorist* philosophically (but see Smith 1996), the following suggests that Mises’s approach to this can, in fact, be described as somewhat ‘pragmatic.’

What the sciences of human action must reject is not determinism but the positivistic and pan-physicalistic distortion of determinism. They stress the fact that ideas determine human action and that at least in the present state of human science it is impossible to reduce the emergence and transformation of ideas to physical, chemical or biological factors. It is this impossibility that constitutes the autonomy of the sciences of human action. (Mises, 1957: 93).

The ultimate givens in social science are the ideas of individuals, including their value judgments of value. There is no accounting for these in terms of more ultimate (physical) causes. Saying that judgments of value are ultimately given facts means that the human mind is unable to trace them back to those facts and happenings with which the natural sciences deal (1957: 69).

It is clear that Mises’s methodology proceeds from the subjectivism of value. Everything in his voluminous work derives from it. While he may not put the same degree of emphasis on the implications of differing expectations, as does Lachmann, it is ever-present in his work. Subjective perceptions and “appraisements” are what drive the market process. Forgetting this, leads to bad economic policy with fateful consequences, the most obvious being the experiment with command economies under the influence of socialist ideology.

Mises eschews the use of the concept of “equilibrium” – an indispensable ingredient of modern economic modeling. Equilibrium requires the assumption of common knowledge – a convergence of expectations. It is appropriate only to a static world.<sup>9</sup> His deliberations are mostly about the

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<sup>8</sup> Much of his early work was lost when he abandoned his library in Vienna to flee the Nazis. Recently however, his papers have been rediscovered (in Moscow!) by Professor Richard Ebeling (having been removed from their Nazi storage location by the invading Russians and taken back to Moscow) and many of his papers have been translated and published for the first time (cites). Mises’s body of work will no doubt continue to be a source of research for many years to come.

<sup>9</sup> It is true that Mises makes use of the idea of an evenly rotating economy – a static world in which no unexpected change occurs and in which the current situation reproduces itself over time in all significant respects. This theoretical construct is used simply as a foil against which to understand better how real world dynamic processes work. He also makes use of end-state

real world of dynamic entrepreneurship, of innovation, invention, speculation, and trial and error selection. And he extends this to the investigation of political processes as well. Humans are in a perpetual state of felt-uneasiness which they seek, by acting, to remove and replace by a preferable situation. People act purposefully, driven by incentives and informed by their idiosyncratic preferences (values) and their (equally unique) expectations. Value is expressed in action as people trade one thing for another according to the benefits they expect. In the process value is created – I give up something I value less for something I value more, and so do you. We both experience an increase in value. Similarly, entrepreneurs assemble productive resources to produce goods or services that they expect will have value for consumers, for which they are prepared to pay in excess of the current value of the resources. The value of the resources is derived (as Menger taught) from the value of the expected output, and this is a matter of belief, of expectation, of the visualizing of a projected future in the form of a production plan, that may or may not be successful. A successful production plan thus entails the identification of economic resources currently undervalued by market participants. The entrepreneur ‘sees’ something new, expects something different, because value is subjective and the future is open. This is how the market process unfolds, without end, in the formation and reformation of production and consumption plans in real time.

Clearly, the fate of each production plan depends in great part on the related plans of other entrepreneurs and of consumers. This means the entrepreneur must make extensive use of his ability to understand the mental processes of others in order to imagine the needs of consumers and the plans of producers whose activities are complementary to or rival to his own. In the same way our investigations as social scientists must make use of this same ability to understand, to render intelligible the actions of our subjects. As humans and as human social scientists we share the world of the *inter-subjective*.

Mises is clearly a thoroughgoing and consistent subjectivist in all of his work, which is a conscious working out of the Austrian tradition established by Menger.

### ***Friederich Hayek – to go where no Austrian economist has thought of going before***

Friederich Hayek, Nobel prize winner in economics in 1974, is probably the best known of the Austrian School economists. His influence in diverse branches of economics, management studies and related fields has been enormous. In addition he was a pioneer in the field of cognitive science, and, in the tradition of his Austrian colleague and friend, Karl Popper, he made important contributions to the philosophy of science. Hayek was a younger colleague of Mises in Austria, but was trained in economics (after studying law and psychology) by Wieser. His long and fruitful intellectual journey was influenced by both of these teachers (Caldwell 2004).

Hayek’s prominence dates from his years at the London School of Economics and the famous debate with John Maynard Keynes over monetary theory and policy in the 1930’s (Hayek 1995). (The essence of that debate has been repeated in subsequent years at various times, until today). It was also at this time that he was engaged in another high-level debate about the meaning and feasibility of socialist planning (Hayek 1997).<sup>10</sup> Hayek’s preoccupation with subjectivism, expectations and social coordination (influenced by his involvement in both the Hayek-Keynes

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constructs – investigating the logical end-state of particular economic processes – for the same reason.

<sup>10</sup> There was even a third famous debate, over Austrian capital theory, along the same lines as an earlier debate between Böhm-Bawerk-Bawerk and his critics.



debate and the Socialist-Calculation debate) led him to develop some of his most important early insights as evidenced in his seminal 1937 and 1945 articles (Hayek 1937 and 1945). These articles, especially the second, are among the most widely cited in the economics literature. They deal with the related questions: what are the data with which both economists (researchers) and their subjects (acting individuals) have to deal when making decisions?; and how are acting individuals able to coordinate their actions given that much of this data is information about the expected actions of others? All human action in society is embedded in networks of shared, but (by definition) subjective meanings that propel and arise from the interaction between individuals – in a nutshell, all human action in society is *interaction*. The ‘data’ that inform human decisions are not given ‘objectively’ in the sense that data on the physical world are, but, rather, include prominently the expected actions of others upon whom the success of our actions depend (Hayek 1937; see also Lewin 1997). Planned actions need to be coordinated in some way in order to succeed.

These initial considerations lead Hayek from an initial attempt to define, examine, refine and, if possible save, the concept of equilibrium (understood as the achievement of plan-coordination), to his abandoning the notion of equilibrium in favor of the broader concept of ‘order’. When his concentrated work on capital theory came to an end around 1941 (in the wake of the Hayek-Keynes debate), we find in him a “shift of methodological perspective from one that emphasized the dualism of the social and natural sciences to one that explored the distinction between ‘simple’ phenomena and ‘complex’ phenomena.” Hayek’s decision to revisit theoretical psychology and publish *The Sensory Order* (1952) brings together both this emphasis on complex phenomena and his attempts to provide a scientific underpinning for traditional Austrian subjectivism. (Horwitz 2008: 144).

Systems of complex phenomena are systems (networks, structures) with many elements that relate to one another in limited, but complicated and often numerous, multi-level (to be explained below), ways, that lead to outcomes that are essentially unpredictable (in their details, though the possible ‘patterns’ may be known). Complex *adaptive* systems are complex systems whose multiple interactions lead to outcomes that are in some significant sense ‘ordered’ or ‘functional’ or ‘organized’ or, as discussed above, ‘coordinated’ (Hayek 1974: 26; also 1955 and 1964). In these systems, complex interaction leads adaptively to outcomes that are coherent and useful according to some scheme of action and evaluation. For example, evolution in nature is a complex adaptive system that works through some selection replication process (constrained by the physical environment) to produce outcomes that are better adapted to the environment (Hayek 1964). The evolution framework is very generalizable and has been applied in multiple contexts, including, of course, to human societies (in which connection it was first conceived). As Hayek discerned very early on, the brain itself is a complex adaptive system (Hayek 1952, based on work done in the 1920s).

Though it is the subject of an increasing body of research effort, and though it has a clearly common-sense type meaning, there is no readily agreed-upon definition of the concept of ‘complexity’ (Page 2011: 24-32; Mitchell 2009: 94-111). For Hayek complexity is in essence a matter of ‘too many variables.’

[W]hat we regard as the field of physics may well be the totality of phenomena where the number of significantly connected variables of different kinds is sufficiently small to enable us to study them as if they formed a closed system for which we can observe and

control all the determining factors; we may have been led to treat certain phenomena as lying outside physics precisely because this is not the case. (Hayek 1955: 4, footnote removed)

The situation is different, however, where *the number of significantly interdependent variables is very large* and only some of them can in practice be individually observed. The position will here frequently be that if *we already know* the relevant laws, we could predict that if several hundred specified factors had the values  $x_1, x_2, x_3, \dots, x_n$ , then there would always occur  $y_1, y_2, y_3, \dots, y_n$ . But in fact all that our observation suggests may be that if  $x_1, x_2, x_3, \dots, x_n$ , then there will occur [some recognizable subset of  $y_1, y_2, y_3, \dots, y_n$  and there may be a large unknown number of subsets; or that perhaps some relation P or Q could result from a  $x_1, \dots, x_3$  or similar input]. There may be no possibility of getting beyond this by means of observation, because it may in practice be impossible to test all the possible combinations of the factors  $x_1, x_2, x_3, \dots, x_n$ . If in the face of the variety and complexity of such a situation our imagination cannot suggest more precise rules than those indicated, no systematic testing will help us over this difficulty. (Hayek 1955: 8, first set of italics added).

Social sciences, like much of biology, but unlike most fields of the physical sciences, have to deal with structures of *essential* complexity, i.e. with structures whose characteristic properties can be exhibited only by models made up of *relatively large numbers of variables* (Hayek 1974: 26, italics added).<sup>11</sup>

It is not a question of *merely* too many variables. The difference in conceptual structures to which Hayek is referring is of a huge magnitude. It is in the first instance a practical matter, but it is most likely also more fundamental and elusive in that in order to successfully model essentially complex structures we would have to engage in a degree of complex classification that is *intrinsically* beyond the capacity of the human brain to accomplish, being that the brain itself is a classifying mechanism of lower complexity than the observed structures (a point that emerges from his 1952

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<sup>11</sup> Hayek (1964: 25n references removed) quotes von Neumann 1951 “we are dealing here with parts of logic with which we have practically no experience. The order of complexity is out of all proportion to anything we have ever known.” Hayek continues: “It may be useful to give here a few illustrations of the orders of magnitude with which biology and neurology have to deal. While the total number of electrons in the Universe has been estimated at 1079 and the number of electrons and protons at  $10^{100}$ , there are in chromosomes with 1,000 locations [genes] with 10 allelomorphs  $10^{1000}$  possible combinations; and the number of possible proteins is estimated at 102700. C. Judson Herrick suggests that ‘during a few minutes of intense cortical activity the number of interneuronic connections actually made (counting also those that are actuated more than once in different associational patterns) may well be as great as the total number of atoms in the solar system’ (i.e. 1056); and Ralph W. Gerard has estimated that in the course of seventy years a man may accumulate  $15 \times 10^{12}$  units of information (‘bits’), which is more than 1,000 times larger than the number of nerve cells. The further complications which social relations superimpose upon this are, of course, relatively insignificant. But the point is that if we wanted to ‘reduce’ social phenomena to physical events, they would constitute an additional complication, superimposed upon that of the physiological processes determining mental events.” See also Fiori 2009.

work on cognitive psychology). In addition there are some systems that are *intrinsically* non-computable/decidable (see Koppl 2010) – the imputation problem in capital theory, discussed above in connection with Wieser, comes to mind.

Though Hayek started out as in his early work on methodology and epistemology (Hayek 1952) as a methodological dualist, drawing a hard categorical distinction between the natural and social sciences, by the 1960's his moving away from this, as the above quotations testify, to a distinction between simple and complex phenomena. He comes to consider this distinction as the more important one.

The implications of complexity in a system (structure, network) are typically that, though intelligible, the outcomes that result from their operation do not provide us with precise value (quantitative) predictions. Instead, they are intelligible in that we are able to understand (comprehend the meaning of) the *types* of outcomes that are possible and are observed. Thus *patterns* rather than values are what can be predicted. As Hayek is anxious to point out, and as has perhaps been insufficiently emphasized, this does not preclude the possibility of an important type of (Popperian) falsification or refutation (a criterion taken by many scientists as the hallmark of acceptable 'scientific' investigation). Certain resulting patterns *are* ruled out by this type of investigation. The observation of a pattern of results not within the range predicted by a model of complex phenomena, would refute the model (Hayek 1964: 32-33; 1974: 30-32). Confirmed observations of inherited traits acquired in a Lamarckian manner would refute the Darwinian version of evolution.

I spoke earlier of multi-level interaction. Hayek's description of complex phenomena implies the phenomenon of *emergence*. Complex adaptive systems are (most) often hierarchical in nature, exhibiting 'lower' and 'higher' levels. Elements existing at the lower level interact in ways that result in the 'emergence' of *qualitatively different* elements at a higher level. But interaction is not limited to any level. Elements at a lower level may be affected (in a 'downward' direction) by the emergent elements at a higher level – as when individual action is influenced by social structures (like institutions and standards) that are, themselves, the result of *prior* individual actions; hence multi-level interaction. The observation that the changes are 'qualitative' in nature is basically a recognition that they cannot be fully 'accounted for' by changes in the elements at the lower level. The new characteristics appear to 'emerge' in a not fully explicable way from the interactions that occur at a lower level. This is a discernible aspect of the 'too many variables' problem, one that is commonly found with complex phenomena. In this, as in other respects, Hayek was ahead of his time, and the flowering of modern-day complexity studies has independently developed many of these themes.

Finally, we may note that Hayek's ideas are relevant to the notion of *heterogeneity* – a phenomenon of increasing interest in economics, sociology, management studies and other areas. All observation and explanation proceeds on the basis of classification (categorization). Phenomena are grouped into categories according to our perception of their essential similarity (homogeneity). The elements of any category (class) might be different in some respects, but in all respects that 'matter' to us they are identical. Items within a particular category can be counted, quantified. The ability to quantify is crucially dependent on being able to count items in this manner. The number and type of categories (variables) is known and fixed. Thus, the arrival of a new category cannot be accommodated within a scheme of simple quantitative variation and must be considered to be a change in *quality*. Qualitative differences are *categorical* differences.

All quantitative modeling proceeds on the basis of the assumption that the individual elements of any given quantifiable variable are identical (homogeneous) and are different in some important respect from those of another variable. Variables are essentially distinguishable categories. In addition the elements of a quantifiable category do not interact with each other – else they could not be simply counted. Each element is an independent, identical instance of the class. (Most obvious is the case of ‘identical randomly distributed variables’). This does not preclude the elements themselves being complex – being the result of lower-level interactions, like identical molecules or biological cells, which are incredibly complex phenomena.

We may think of this in terms of *structure*. Structure implies connections/interactions. As indicated earlier, a structure is composed of heterogeneous items that are more than simply a list of those items. There is a sense of how the heterogeneous items work together to ‘produce’ something. (We see here how a *capital-structure is both a metaphor for and a particular case of the phenomenon of complex structures* in the world.) A structure is an ‘order’ in Hayek’s sense, in which it is possible to know something about the whole by observing the *types* and the ways in which they are *related*, without having to observe a totality of the elements. Structures are *relational*. Elements are defined not only by their individual characteristics but also by the manner in which they relate to other elements. These interactions are, in effect, additional variables.

Thus, though the elements of a quantifiable category may be unstructured, these elements may be *composed* of structured sub-elements. This is the basis of the phenomenon of *modularity*. Self-contained (possibly complex) modules may be quantified. This dramatically simplifies the organization of complex phenomena, as has been noted in a fast growing literature on the subject. Modularity is both a ubiquitous phenomenon in nature and in social organizations. It is an indispensable principle of hierarchically structured complex systems. The benefits of modularity in social settings include the facilitation of adjustment to change, and of product design, and the reaping of large economies in the use and management of knowledge (see for example Baldwin and Clark 2000, Langlois 2002, 2012) and it is clearly an aspect, perhaps the key aspect, of physical and human capital-structures. Capital-goods themselves are modules, which are creatively grouped into capital-combinations which constitute the modules of the (non-quantifiable) capital-structure.

Quantitative modeling works well when both the independent and dependent variables are meaningful, identifiable quantifiable categories that can be causally related. The model ‘works’ then in the sense of providing quantitative predictions. The inputs and outputs can be described in quantitative terms. But, when the outcome of the process described by the model is a new (novel) category of things, no such quantitative prediction is possible. Ambiguity in the type and number of categories in any system destroys the ability to meaningfully describe that system exclusively in terms of quantities. We have a sense then of the effects of heterogeneity. *Variation* applies to quantitative range. *Heterogeneity* (variety) applies to qualitative (categorical) range. *Diversity* incorporates both, but they are significantly different. Heterogeneity may not be necessary for complexity, but heterogeneity does militate in its favor. For example, compound interaction between *quantitative* variables (categories) can be an important characteristic of complex systems, but complex systems are likely to result from substantial heterogeneity, *especially where heterogeneity is open-ended, in the sense that the set of all possible categories of things is unknown and unknowable*. These considerations strongly suggest that the capital-structure of a market economy is a complex phenomenon (in the technical sense discussed

above). Its heterogeneity rules out aggregation, which, in turn, rules out quantitative prediction and control, but certainly does not rule out the type of ‘pattern prediction’ of which Hayek spoke.

Subjectivism thus plays a crucial role in Hayek’s thought on economics, epistemology and philosophy of science. Primarily, subjectivism manifests in the fact that the data, the knowledge, propelling human is, in large part, the expectations of the acting agents about the actions of others upon whom the success of their actions depend. Individual action is inter-action in a world of intersubjective meanings. This makes social systems extremely complex. And complex systems cannot be handled in the same way as simple systems. Over and above the distinction between social and natural phenomena there is, in addition, the distinction between simple and complex phenomena. Hayek upholds the methodological dualism of Mises but adds another dimension to it.

### ***Ludwig Lachmann – the radical subjectivist***

Though he could, with justification be described as a fellow ‘Austrian Economist,’ Ludwig Lachmann was born and educated in Germany, not in Austria. He became acquainted with and enamored of Austrian economics as a young student in his twenties, discovering the work of Joseph Schumpeter and Ludwig von Mises. (He met Mises for the first time in 1932.) He spent the rest of his long professional life working within and fighting for the causes of the ‘Austrian School’ as he saw them (Mittermaier 1992 ; also Grinder 1977).

Lachmann’s subjectivism stems from his preoccupation with expectations.

Austrian economics reflects a ‘subjectivist’ view of the world. The subjective nature of human preferences is its root. But in a world of change the subjectivism of expectations is perhaps even more important. (Lachmann 1976, 28).

From his extensive work on capital theory (the ultimate consummation of which is Lachmann 1978 [1956]), he realized that the subjectivism of value, when considered in the context of durable production goods, especially in combination, implied the imputation problem – the imputation of value to the production goods (capital goods) of a value derived from the *expected* value of the produced output. The latter was uncertain, both because of uncertainties associated with the production plan itself, and because the value of any produced output depended on what consumers would ultimately pay for them. There was no objective value available to attribute to any production plan or its components. There was, therefore, an inescapable individual, uncaused (“autonomous”), aspect to any production plan. It was the entrepreneur’s projections, based on his expectations that, directed the plan. Different entrepreneurs will have different expectations about the same future – some of which will be contradictory. Among a set of differing expectations of the same future, at most one can be correct. Error is thus inevitable and ubiquitous.

The future is unknowable, though not unimaginable. Future knowledge cannot be had now, but it can cast its shadow ahead. In each mind, however, the shadow assumes a different shape, hence the divergence of expectations. The formation of expectations is an act of our mind by means of which we try to catch a glimpse of the unknown. Each one of us catches a different glimpse. The wider the range of divergence the greater the possibility that somebody’s expectation will turn out to be right (Lachmann (1976a, 59).

The reality of disparate, autonomously generated, expectations in the commercial sphere, meant one could not assume that the market process was one that was characterized by any inherent tendency to converge to an equilibrium of prices, quantities and uniform expectations. The market was subject to continual change as time passed. It was inconceivable that time could pass without new knowledge emerging. Clearly learning was going on, but different people learned different things and there was no guarantee that what they learned would bring the market any closer to equilibrium.

What emerges from our reflections is an image of the market as a particular kind of process, a continuous process without beginning or end, propelled by the interaction between the forces of equilibrium and the forces of change (Lachmann 1976a: 59).

Lachmann thus rejects the notion of the predominance of equilibrating tendencies even in 'theory.' He did not see it as legitimate to omit from the theory the undeniably disequilibrating effects of the inevitable change in knowledge that must occur with the passage of time. In this he was alone among his contemporaries and predecessors in the Austrian School, hence the appellation 'radical subjectivist' (though his students and younger colleagues found his message compelling and full of potential for corollary insights)<sup>12</sup>. This disagreement about equilibrium tendencies is not about whether or not equilibrium is ever reached. There is no disagreement that it is not. What emerges as an issue for all the Austrian economists is the question of how people can act in a world which is always subject to changes in the 'data' so that it is always *de facto* in disequilibrium, the so-called 'Lachmann problem' (Koppl 1998: 61). And the answer they all give in one form or another is the existence of social institutions – the existence of rules, habits, customs, mores, etc. that serve to anchor people's expectations about the actions of others in such a way as to permit them to act coherently in anticipation of predictable consequences.

The problem is particularly acute for Lachmann the 'radical subjectivist.' For him expectations are autonomous. Though they may be influenced by events they are not wholly determined by them. All experience must be interpreted and may be interpreted differently by different individuals. This creates unavoidable uncertainty and error. It is the world in which there is work for the entrepreneur who pits his vision of the future against those of his rivals. It is a kaleidic world. Action is by definition goal oriented, informed by knowledge of a causal mechanism that presupposes a tight connection between action and outcome. But if outcomes are radically uncertain why are people not debilitated? How is action possible in a radically uncertain world? Stated differently, on the one hand there are the undeniable facts of novelty and disequilibrium and the inability to foresee all consequences. On the other hand, there is the undeniable fact of

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<sup>12</sup> The issue emerges most clearly in the decades long friendly debate with his younger colleague, Israel Kirzner (see figure 1 above), a former Mises student and later professor of economics at New York University. While Kirzner differed with Lachmann on the question of equilibrating tendencies, he respected and was influenced by Lachmann's insights. He shared Lachmann's view of the need to tackle the theoretical challenges posed by the dynamism of the market economy. The other younger 'Austrian' contemporary was Murray Rothbard. Rothbard was also a former Mises student, and while he left a legacy of extensive and admirable scholarship, his preoccupations did not include much in relation to the question of subjectivism, beyond what he took for granted from Mises. He was not sympathetic to Lachmann's views and was not concerned about the 'Lachmann problem.'

order in society in which people seem able to act by relying on successfully predicting the actions of others. How one is to reconcile these apparently irreconcilable perspectives has been a question that has motivated much work in this field.

### **Concluding comments - Austrian economics in the modern world.**

These considerations have featured significantly in the post-1974 revival of the Austrian School.<sup>13</sup> This revival has built on all aspects of the Austrian market process framework – on its particular approach to business cycles, to capital theory, to institutions, always rooted firmly in its subjectivist foundations. Subjectivism itself has been front and center and features most prominent is the work of Don Lavoie, who was much inspired by Lachmann, but whose vision extended over a much wider range, from Mises to Habermas and other Continental philosophers (for example Lavoie 2011).<sup>14</sup> Lavoie explored the role of institutions, culture and language in a comprehensive ‘economics of meaning.’ In some respects, the Austrian School preoccupation with subjectivism reached its culmination in his work. And his is a vision that is actively being carried forward in many and varied applications by his students and their students (see Storr 2013).

From Menger to the present day, the fortunes of the Austrian School of economics has waxed and waned. Though a small minority in the current world of economic scholarship and practice, it has survived and its adherents are growing. In part this is because economic crises tend to stimulate interest in it; but it is also, and perhaps more importantly, because the Austrian School, built as it is on the firm philosophical foundations of human action driven by subjective perceptions, is arguably in a better position to engage the rapidly changing world in which we live.

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<sup>13</sup> As mentioned, 1974 was the year Hayek was awarded the Nobel prize. It was also the year in which an historic meeting took place in South Royalton, Vermont at which the surviving elder statesmen of the Austrian School, Lachmann, Kirzner and Rothbard, presented papers on various aspects of Austrian economics, looking backward to its foundations and forward to its potential development. The modern revival of the Austrian School is dated to this meeting (Dolan 1974).

<sup>14</sup> Lavoie's life was cut tragically short when he died from cancer in 2001. His influence from a considerable body of work is, nevertheless, considerable.

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