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## F. A. Hayek (1899–1992)

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F. A. Hayek is undoubtedly the most eminent of the modern Austrian economists. Student of Friedrich von Wieser, protégé and colleague of Ludwig von Mises, and foremost representative of an outstanding generation of Austrian school theorists, Hayek was more successful than anyone else in spreading Austrian ideas throughout the English-speaking world. “When the definitive history of economic analysis during the 1930s comes to be written,” said John Hicks in 1967, “a leading character in the drama (it was quite a drama) will be Professor Hayek. . . . [I]t is hardly remembered that there was a time when the new theories of Hayek were the principal rival of the new theories of Keynes” (Hicks, 1967, p. 203). Unfortunately, Hayek’s theory of the business cycle was eventually swept aside by the Keynesian revolution. Ultimately, however, this work was again recognized when Hayek received, along with the Swede Gunnar Myrdal, the 1974 Nobel Memorial Prize in Economic Science. Hayek was a prolific writer over nearly seven decades; his *Collected Works*, currently being published by the University of Chicago Press and Routledge, are projected at nineteen volumes.

### *Life and Work*

Hayek’s life spanned the twentieth century, and he made his home in some of the great intellectual communities of the period.<sup>1</sup> Born Friedrich August von Hayek in 1899 to a distinguished family of Viennese intellectuals,<sup>2</sup> Hayek attended the University of Vienna, earning

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<sup>1</sup> For a fuller biographical account see Hayek, 1994, and the introduction by Stephen Kresge.

<sup>2</sup> Hayek’s father was a physician and botanist. One grandfather, a statistician, was a friend of Eugen von Böhm-Bawerk; the philosopher Ludwig Wittgenstein was a second cousin.

doctorates in 1921 and 1923. Hayek came to the University at age 19 just after World War I, when it was one of the three best places in the world to study economics (the others being Stockholm and Cambridge, England). Though he was enrolled as a law student, his primary interests were economics and psychology, the latter due to the influence of Mach's theory of perception on Wieser and Wieser's colleague Othmar Spann, and the former stemming from the reformist ideal of Fabian socialism so typical of Hayek's generation.

Like many students of economics then and since, Hayek chose the subject not for its own sake, but because he wanted to improve social conditions—the poverty of postwar Vienna serving as a daily reminder of such a need. Socialism seemed to provide a solution. Then in 1922 Mises published his *Die Gemeinwirtschaft*, later translated as *Socialism*. “To none of us young men who read the book when it appeared,” Hayek recalled, “the world was ever the same again” (Hayek, 1956, p. 133). *Socialism*, an elaboration of Mises's pioneering article from two years before, argued that economic calculation requires a market for the means of production; without such a market there is no way to establish the values of those means and, consequently, no way to find their proper uses in production. Mises's devastating attack on central planning converted Hayek to laissez-faire, along with contemporaries like Wilhelm Röpke, Lionel Robbins, and Bertil Ohlin.

It was around this time that Hayek began attending Mises's famed *Privatseminar*. Regular participants, who received no academic credit or other official recognition for their time, included Hayek, Gottfried Haberler, Fritz Machlup, Oskar Morgenstern, Paul Rosenstein-Rodan, Richard von Strigl, Karl Schlesinger, Felix Kaufmann, Alfred Schütz, Eric Voegelin, Karl Menger, Jr., and others not so famous. For several years the *Privatseminar* was the center of the economics community in Vienna, attracting such visitors as Robbins from London and Howard S. Ellis from Berkeley. Later, Hayek became the first of this group to leave Vienna; most of the others, along with Mises himself, were also gone by the start of World War II.

Mises had done earlier work on monetary and banking theory, successfully applying the Austrian marginal utility principle to the value of money and then sketching a theory of industrial fluctuations based on the doctrines of the British Currency School and the ideas of the Swedish economist Knut Wicksell. Hayek used this last as a starting point for his own research on fluctua-

tions, explaining the origin of the business cycle in terms of bank credit expansion and its transmission in terms of capital malinvestments. His work in this area eventually earned him an invitation to lecture at the London School of Economics and Political Science and then to occupy its Tooke Chair in Economics and Statistics, which he accepted in 1931. There he found himself among a vibrant and exciting group: Robbins, J. R. Hicks, Arnold Plant, Dennis Robertson, T. E. Gregory, Abba Lerner, Kenneth Boulding, and George Shackle, to name only the most prominent. Hayek brought his (to them) unfamiliar views,<sup>3</sup> and gradually, the “Austrian” theory of the business cycle became known and accepted. At the L.S.E. Hayek lectured on Mises’s business-cycle theory, which he was refining and which, until Keynes’s *General Theory* came out in 1936, was rapidly gaining adherents in Britain and the U.S. and was becoming the preferred explanation of the Depression.

Hayek and Keynes had sparred in the early 1930s in the pages of the *Economic Journal*, over Keynes’s *Treatise on Money*. As one of Keynes’s leading professional adversaries, Hayek was well situated to provide a full refutation of the *General Theory*. But he never did. Part of the explanation for this no doubt lies with Keynes’s personal charm and legendary rhetorical skill, along with Hayek’s general reluctance to engage in direct confrontation with his colleagues.<sup>4</sup> Hayek also considered Keynes an ally in the fight against wartime inflation and did not want to detract from that issue (Hayek, 1994, p. 91). Furthermore, as Hayek later explained, Keynes was constantly changing his theoretical framework, and Hayek saw no point in working out a detailed critique of the *General Theory*, if Keynes might change his mind again (Hayek, 1963, p. 60; Hayek, 1966, pp. 240–41). Hayek thought a better course would be to produce a fuller elaboration of Böhm-Bawerk’s capital theory, and he began to devote his energies to this project. Unfortunately, *The Pure Theory of Capital* was not completed until 1941, and by then the Keynesian macro model had become firmly established.<sup>5</sup>

<sup>3</sup> Hicks (1967, p. 204) noted, in reference to Hayek’s first (1931) English book, that “*Prices and Production* was in English, but it was not English economics.”

<sup>4</sup> In addition, Hayek (1963, p. 60) cited his own “tiredness from controversy”; he had already engaged the market socialists on economic calculation, Knight on capital theory, and Keynes on money.

<sup>5</sup> For more on Hayek’s failure to respond to the *General Theory* see Caldwell, 1995, esp. pp. 40–46. Hayek (1963, pp. 60–61; 1966, pp. 240–41) also believed that an effective refutation of Keynes would have to begin with a

Within a very few years, however, the fortunes of the Austrian school suffered a dramatic reversal. First, the Austrian theory of capital, an integral part of the business-cycle theory, came under attack from the Italian-born Cambridge economist Piero Sraffa and the American Frank Knight, while the cycle theory itself was forgotten amid the enthusiasm for the *General Theory*. Second, beginning with Hayek's move to London and continuing until the early 1940s, the Austrian economists left Vienna, for personal and then for political reasons, so that a school ceased to exist there as such.<sup>6</sup> Mises left Vienna in 1934 for Geneva and then New York, where he continued to work in isolation; Hayek remained at the L.S.E. until 1950, when he joined the Committee on Social Thought at the University of Chicago. Other Austrians of Hayek's generation became prominent in the U.S.—Gottfried Haberler at Harvard, Fritz Machlup and Oskar Morgenstern at Princeton, Paul Rosenstein-Rodan at MIT—but their work no longer seemed to show distinct traces of the tradition founded by Carl Menger.

At Chicago Hayek again found himself among a dazzling group: the economics department, led by Knight, Milton Friedman, and later George Stigler, was one of the best anywhere, and Aaron Director at the law school soon set up the first law and economics program.<sup>7</sup> But economic theory, in particular its style of reasoning, was rapidly changing; Paul Samuelson's *Foundations* had appeared in 1947, establishing physics as the science for economics to imitate, and Friedman's 1953 essay on "positive economics" set a new standard for economic method. In addition, Hayek had ceased to work on economic theory, concentrating instead on psychology, philosophy, and politics, and Austrian economics entered a prolonged eclipse.<sup>8</sup> Important work in

thorough critique of aggregate, or "macro" economics more generally. Caldwell (1988) suggests another reason: it was during this time that Hayek was losing faith in equilibrium theory and moving toward a "market process" view of economic activity, making it difficult for him to engage Keynes on the same terms in which they had debated earlier. McCormick (1992, pp. 99–134) and Blaug (1993, pp. 53–55) propose an entirely different reason: Hayek couldn't respond because the Austrian capital theory, on which the cycle theory was built, was simply wrong.

<sup>6</sup> On the emigration of the Austrian economists see Craver, 1986.

<sup>7</sup> However, at Chicago Hayek was considered something of an outsider; his post was with the Committee on Social Thought, not the economics department, and his salary was paid by a private foundation, the William Volker Fund (the same organization that paid Mises's salary as a visiting professor at New York University).

<sup>8</sup> By this time, Hayek (1994, p. 126) said, "I had . . . become somewhat stale as an economist and felt much out of sympathy with the direction in which economics was developing. Though I had still regarded the work I had done during the 1940s on scientific method, the history of ideas, and political theory as temporary excursions into

the Austrian tradition was done during this period by Rothbard (1956, 1962, 1963a, 1963b), Kirzner (1963, 1966, 1973), and Lachmann (1956), but at least publicly, the Austrian tradition lay mostly dormant.

When the 1974 Nobel Prize in economics went to Hayek, interest in the Austrian school was suddenly and unexpectedly revived. While this was not the first event of the so-called “Austrian revival,” the memorable South Royalton conference having taken place earlier the same year, the rediscovery of Hayek by the economics profession was nonetheless a decisive event in the renaissance of Austrian economics.<sup>9</sup> Hayek’s writings were taught to new generations, and Hayek himself appeared at the early Institute for Humane Studies conferences in the mid-1970s. He continued to write, producing *The Fatal Conceit* in 1988, at the age of 89. Hayek died in 1992 in Freiburg, Germany, where he had lived since leaving Chicago in 1961.

### *Contributions to Economics*

Hayek’s legacy in economics is complex. Among mainstream economists, he is mainly known for his popular *The Road to Serfdom* (1944) and for his work on knowledge in the 1930s and 1940s (Hayek, 1937, 1945). Specialists in business-cycle theory recognize his early work on industrial fluctuations, and modern information theorists often acknowledge Hayek’s work on prices as signals, although his conclusions are typically disputed.<sup>10</sup> Hayek’s work is also known in political philosophy (Hayek, 1960), legal theory (Hayek 1973–79), and psychology (Hayek,

another field, I found it difficult to return to systematic teaching of economic theory and felt it rather as a release that I was not forced to do so by my teaching duties.”

<sup>9</sup> The proceedings of the South Royalton conference were published as *The Foundations of Modern Austrian Economics* (Dolan, 1976). A follow-up volume appeared two years later: *New Directions in Austrian Economics* (Spadaro, 1978). For perspectives on the Austrian revival see Rothbard, 1995, and Vaughn, 1996. Salerno (1996b) argues that the Austrian revival should be dated not from 1974, but from 1962–63, when Rothbard published *Man, Economy, and State* (1962), *America’s Great Depression* (1963a), and *What Has Government Done to Our Money?* (1963b), the works that sparked the younger South Royalton participants’ interest in Austrian economics.

<sup>10</sup> Lucas (1977) cites Hayek as a leading exponent of pre-Keynesian business-cycle theory. Grossman and Stiglitz (1976) and Grossman (1980, 1989) argue that contrary to Hayek, market prices are not “sufficient statistics” for changes in tastes and technology. This literature tries to test the “informative content” of price signals, and contends that in general only perfectly competitive prices convey useful information. Farrell and Bolton (1990) claim that Hayek overstates the coordinating properties of decentralized market exchange. Hayek’s 1945 paper is also frequently cited in the new institutional literature emphasizing process and adaptation, although coordination through markets is seen as only one type of desirable coordination. See, for example, Williamson, 1991.

1952). Within the Austrian school of economics, Hayek's influence, while undeniably immense, has very recently become the subject of some controversy. His emphasis on spontaneous order and his work on complex systems has been widely influential among many Austrians. Others have preferred to stress Hayek's work in technical economics, particularly on capital and the business cycle, citing a tension between some of Hayek's and Mises's views on the social order. (While Mises was a rationalist and a utilitarian, Hayek focused on the limits to reason, basing his defense of capitalism on its ability to use limited knowledge and learning by trial and error.)

*Business-cycle theory.* Hayek's writings on capital, money, and the business cycle are widely regarded as his most important contributions to economics (Hicks, 1967; Machlup, 1976). Building on Mises's *Theory of Money and Credit* (1912), Hayek showed how fluctuations in economy-wide output and employment are related to the economy's capital structure. In *Prices and Production* (1931) he introduced the famous "Hayekian triangles" to illustrate the relationship between the value of capital goods and their place in the temporal sequence of production. Because production takes time, factors of production must be committed in the present for making final goods that will have value only in the future after they are sold. However, capital is heterogeneous. As capital goods are used in production, they are transformed from general-purpose materials and components to intermediate products specific to particular final goods. Consequently, these assets cannot be easily redeployed to alternative uses if demands for final goods change. The central macroeconomic problem in a modern capital-using economy is thus one of *intertemporal coordination*: how can the allocation of resources between capital and consumer goods be aligned with consumers' preferences between present and future consumption? In *The Pure Theory of Capital* (1941), perhaps his most ambitious work, Hayek describes how the economy's structure of production depends on the characteristics of capital goods—durability, complementarity, substitutability, specificity, and so on. This structure can be described by the various "investment periods" of inputs, an extension of Böhm-Bawerk's notion of "roundaboutness," the degree to which production takes up resources over time.<sup>11</sup>

<sup>11</sup> Hayek ultimately rejected Böhm-Bawerk's "average period of production" as a useful concept, though he had used it earlier in *Prices and Production* (1931). See Hayek, 1994, p. 141, and White, 1996.

In *Prices and Production* (1931) and *Monetary Theory and the Trade Cycle* (1933a) Hayek showed how monetary injections, by lowering the rate of interest below what Mises (following Wicksell) called its “natural rate,” distort the economy’s intertemporal structure of production.<sup>12</sup> Most theories of the effects of money on prices and output (then and since) consider only the effects of the total money supply on the price level and aggregate output or investment. The Austrian theory, as developed by Mises and Hayek, focuses on the way money enters the economy (“injection effects”) and how this affects relative prices and investment in particular sectors. In Hayek’s framework, investments in some stages of production are “malinvestments” if they do not help to align the structure of production to consumers’ intertemporal preferences. The reduction in interest rates caused by credit expansion directs resources toward capital-intensive processes and early stages of production (whose investment demands are more interest-rate elastic), thus “lengthening” the period of production. If interest rates had fallen because consumers had changed their preferences to favor future over present consumption, then the longer time structure of production would have been an appropriate, coordinating response. A fall in interest rates caused by credit expansion, however, would have been a “false signal,” causing changes in the structure of production that do not accord with consumers’ intertemporal preferences.<sup>13</sup> The boom generated by the increase in investment is artificial. Eventually, market participants come to realize that there are not enough savings to complete all the new projects; the boom becomes a bust as these malinvestments are discovered and liquidated.<sup>14</sup> Every artificial boom induced by credit expansion, then, is self-reversing. Recovery consists of liquidating the malinvestments

<sup>12</sup> Hayek thought the more important case was when the market interest rate was kept constant despite a rise in the natural interest rate. In his writings, however, he focused on the expositionally easier case when credit expansion lowers the market interest rate below an unchanged natural rate.

<sup>13</sup> For most of his career Hayek viewed a system of fractional-reserve banking as inherently unstable, endorsing a role (in principle) for government stabilization of the money supply. In later writings, beginning with *The Constitution of Liberty* (1960) and culminating in *Denationalisation of Money* (1976), he argued in favor of competition among private issuers of fiat money. See White, 1997.

<sup>14</sup> Anticipating modern cycle theories, Hayek (1939) recognized that the behavior of the cycle depends on expectations about future price and interest-rate movements. As Garrison and Kirzner put it (1987, p. 612), for Hayek “prices are signals, not marching orders.” But Hayek did not believe agents could know the real structure of the economy, to correctly distinguish movements in interest rates generated by changes in consumers’ intertemporal preferences from those generated by changes in the money supply.

induced by the lowering of interest rates below their natural levels, thus restoring the time structure of production so that it accords with consumers' intertemporal preferences.<sup>15</sup>

*Knowledge, prices, and competition as a discovery procedure.* Hayek's writings on dispersed knowledge and spontaneous order are also widely known, but more controversial. In "Economics and Knowledge" (1937) and "The Use of Knowledge in Society" (1945) Hayek argued that the central economic problem facing society is not, as is commonly expressed in textbooks, the allocation of given resources among competing ends. "It is rather a problem of how to secure the best use of resources known to any of the members of society, for ends whose relative importance only those individuals know. Or, to put it briefly, it is a problem of the utilization of knowledge not given to anyone in its totality" (Hayek, 1945, p. 78).

Much of the knowledge necessary for running the economic system, Hayek contended, is in the form not of "scientific" or technical knowledge—the conscious awareness of the rules governing natural and social phenomena—but of "" knowledge, the idiosyncratic, dispersed bits of understanding of "circumstances of time and place." This tacit knowledge is often not consciously known even to those who possess it and can never be communicated to a central authority. The market tends to use this tacit knowledge through a type of "discovery procedure" (Hayek, 1968a), by which this information is unknowingly transmitted throughout the economy as an unintended consequence of individuals' pursuing their own ends.<sup>16</sup> Indeed, Hayek's (1948b) distinction between the neoclassical notion of "competition," identified as a set of equilibrium conditions (number of market participants, characteristics of the product, and so on), and the older notion of competition as a rivalrous process, has been widely influential in Austrian economics (Kirzner, 1973; Machovec, 1995).

<sup>15</sup> For general overviews of Hayek's macroeconomic views see O'Driscoll, 1977, and Garrison and Kirzner, 1987. For expositions and interpretations of the Austrian trade-cycle theory, particularly as it relates to modern cycle theories, see Garrison, 1978, 1984; Bellante and Garrison, 1988; Van Zijp, 1993; and Foss, 1994, pp. 39–55.

<sup>16</sup> Hayek's use of an argument from ignorance as a defense of the market is unusual. Modern economists typically require assumptions of hyperrationality—complete and perfect information, rational expectations, perfect markets, and so on—to justify market allocations as "efficient." In the new microeconomics literature on information and incentives, theorists like Joseph Stiglitz have used deviations from these assumptions of perfection to reach a verdict of market *failure* and to provide a rationale for government intervention (see note 9 above). For Hayek, by contrast, the fact that agents are not hyperrational is an argument not against individual freedom, but against state planning and social control.



For Hayek, market competition generates a particular kind of order—an order that is the product “of human action but not human design” (a phrase Hayek borrowed from Adam Smith’s mentor Adam Ferguson). This “spontaneous order” is a system that comes about through the independent actions of many individuals, and produces overall benefits unintended and mostly unforeseen by those whose actions bring it about. To distinguish between this kind of order and that of a deliberate, planned system, Hayek (1968b, pp. 72–76) used the Greek terms *cosmos* for a spontaneous order and *taxis* for a consciously planned one.<sup>17</sup> Examples of a *cosmos* include the market system as a whole, money, the common law, and even language. A *taxis*, by contrast, is a designed or constructed organization, like a firm or bureau; these are the “islands of conscious power in [the] ocean of unconscious cooperation like lumps of butter coagulating in a pail of buttermilk” (D. H. Robertson, quoted in Coase, 1937, p. 35).<sup>18</sup>

Most commentators view Hayek’s work on knowledge, discovery, and competition as an outgrowth of his participation in the socialist calculation debate of the 1920s and 1930s. The socialists erred, in Hayek’s view, in failing to see that the economy as a whole is necessarily a spontaneous order and can never be deliberately made over in the way that the operators of a planned order can exercise control over their organization. This is because planned orders can handle only problems of strictly limited complexity. Spontaneous orders, by contrast, tend to evolve through a process of natural selection, and therefore do not need to be designed or even understood by a single mind.<sup>19</sup>

### *Hayek and Austrian Economics*

Clearly, the Austrian revival owes as much to Hayek as to anyone. But are Hayek’s writings really “Austrian economics”—part of a separate, recognizable tradition—or should we regard

<sup>17</sup> Earlier Hayek (1933b, p. 27) had used “organism” and “organization,” borrowed from Mises, to distinguish the two; this is the distinction cited by Coase in his famous 1937 article, “The Nature of the Firm.”

<sup>18</sup> On the relationship between the socialist calculation debate and the theory of the firm see Klein, 1996.

<sup>19</sup> For more on spontaneous order see Fehly, 1986. Vanberg (1994) argues that Hayek’s notion of spontaneous order via group selection is incompatible with methodological individualism.

them, instead, as an original, deeply personal, contribution?<sup>20</sup> Some observers charge that Hayek's later work, particularly after he began to turn away from technical economics, shows more influence of his friend Sir Karl Popper than of Carl Menger or Mises: one critic speaks of "Hayek I" and "Hayek II"; another writes on "Hayek's Transformation."<sup>21</sup>

It is true that Popper had a significant impact on Hayek's mature thought. Of greater interest is the precise nature of Hayek's relationship with Mises. Undoubtedly, no economist has had a greater impact on Hayek's thinking than Mises—not even Wieser, from whom Hayek learned his craft but who died in 1927 when Hayek was still a young man. In addition, Mises clearly considered Hayek the brightest of his generation.<sup>22</sup> Yet, as Hayek (1978a) noted, he was from the beginning always something less than a pure follower: "Although I do owe [Mises] a decisive stimulus at a crucial point of my intellectual development, and continuous inspiration through a decade, I have perhaps most profited from his teaching because I was not initially his student at the university, an innocent young man who took his word for gospel, but came to him as a trained economist, versed in a parallel branch of Austrian economics [the Wieser branch] from which he gradually, but never completely, won me over."

Much has been written on Hayek's and Mises's views on the socialist calculation debate. The issue is whether a socialist economy is "impossible," as Mises charged in 1920, or simply less efficient or more difficult to implement. Hayek (1992, p. 127) maintained later that Mises's "central thesis was not, as it is sometimes misleadingly put, that socialism is impossible, but that it cannot achieve an efficient utilization of resources." That interpretation is itself subject to

<sup>20</sup> Wieser's have generally been considered a personal contribution, by Hayek himself and others. For a contrary view see Ekelund, 1986.

<sup>21</sup> For Hayeks I and II see Hutchison, 1984, pp. 210–19; for the "transformation" see Caldwell, 1988. The secondary literature contains some debate about whether Hayek's 1937 article "Economics and Knowledge" represents a decisive break with Mises in favor of a Popperian "falsificationist" approach, one holding that empirical evidence can be used to falsify a theory (though not to "verify" it by induction). For the case that 1937 is a crucial turning point see Hutchison (1984, p. 215) and Caldwell (1988, p. 528); for the reverse see Gray (1984, pp. 16–21) and Garrison and Kirzner (1987, pp. 610). Hayek (1992, pp. 55–56; 1994, pp. 72–74) himself supported the former interpretation, maintaining that it was indeed Mises he had hoped to persuade in the 1937 article. If true, Hayek's attempt was remarkably subtle, for Mises apparently welcomed Hayek's argument, unaware that it was directed at him.

<sup>22</sup> Margit von Mises (1984, p. 133) recalls of her husband's seminar in New York that he "met every new student hopeful that one of them might develop into a second Hayek."

dispute. Hayek is arguing here against the standard view on economic calculation, found for instance in Schumpeter (1942, pp. 172–186) or Bergson (1948). This view holds that Mises’s original statement of the impossibility of economic calculation under socialism was refuted by Oskar Lange, Fred Taylor, and Abba Lerner, and that later modifications by Hayek and Robbins amounted to an admission that a socialist economy is possible in theory but difficult in practice because knowledge is decentralized and incentives are weak. Hayek’s response in the cited text, that Mises’s actual position has been exaggerated, receives support from the primary revisionist historian of the calculation debate, Don Lavoie, who states that the “central arguments advanced by Hayek and Robbins did not constitute a ‘retreat’ from Mises, but rather a clarification directing the challenge to the later versions of central planning . . . Although comments by both Hayek and Robbins about computational difficulties of the [later approaches] were responsible for misleading interpretations of their arguments, in fact their main contributions were fully consistent with Mises’s challenge” (Lavoie, 1985, p. 20). Kirzner (1988) similarly contends that Mises’s and Hayek’s positions should be viewed together as an early attempt to elaborate the Austrian “entrepreneurial-discovery” view of the market process. Salerno (1990a) argues, by contrast, in favor of the traditional view—that Mises’s original calculation problem is different from the discovery-process problem emphasized by Lavoie and Kirzner.<sup>23</sup>

Furthermore, Hayek’s later emphasis on group selection and spontaneous order is not shared by Mises, although there are elements of this line of thought in Menger. A clue to this difference is in Hayek’s (1978a) statement that “Mises himself was still much more a child of the rationalist tradition of the Enlightenment and of continental, rather than of English, liberalism . . . than I am myself.” This is a reference to the “two types of liberalism” to which Hayek frequently refers: the continental rationalist or utilitarian tradition, which emphasizes reason and man’s ability to shape his surroundings, and the English common-law tradition, which stresses the limits to reason and the “spontaneous” forces of evolution.<sup>24</sup>

<sup>23</sup> Hayek’s writings on socialist economic calculation are collected in Hayek, 1997. See Caldwell, 1997, for an overview.

<sup>24</sup> For more on the complex and subtle Mises–Hayek relationship see Klein, 1992, pp. 7–13 and the references cited therein.

Recently, the relationship between Mises and Hayek has become a full-fledged “de-homogenization” debate. Salerno (1990a, 1990b, 1993, 1994) and Rothbard (1991, 1995) see Hayek’s emphasis on knowledge and discovery as substantially different from Mises’s emphasis on purposeful human action. Salerno (1993), for example, argues that there are two strands of modern Austrian economics, both descended from Menger. One, the Wieser–Hayek strand, focuses on dispersed knowledge and the price system as a device for communicating knowledge. Another, the Böhm-Bawerk–Mises strand, focuses on monetary calculation (or “appraisal,” meaning anticipation of future prices) based on existing money prices. Kirzner (1995a, 1995b, 1996, 1997) and Yeager (1994, 1995) argue, by contrast, that the differences between Hayek and Mises are more matters of emphasis and language than substance.<sup>25</sup>

Regardless, there is widespread agreement that Hayek ranks among the greatest members of the Austrian school, and among the leading economists of the twentieth century. His work continues to be influential in business-cycle theory, comparative economic systems, political and social philosophy, legal theory, and even cognitive psychology. Hayek’s writings are not always easy to follow—he describes himself as “puzzler” or “muddler” rather than a “master of his

<sup>25</sup> Kirzner (1995b, p. 1244), for example, writes that Mises’s and Hayek’s critiques of socialism “are simply different ways of expounding the same basic, Austrian, insight. . . . To fail to see the common economic understanding shared by Mises and Hayek, is to have been needlessly misled by superficial differences in exposition and emphasis. To compound this failure by perceiving a clash, among modern Austrians, of ‘Hayekians’ versus ‘Misesians,’ is to convert an interpretive failure into a *dogmengeschichtliche* nightmare.” For more on the de-homogenization debate see Herbener, 1991, 1996; Salerno, 1994, 1996a; Hoppe, 1996; Boettke, 1997; and Yeager, 1995. Rothbard (1994, p. 559) identifies three “distinctive and often clashing paradigms within Austrian economics: Misesian praxeology; the Hayek–Kirzner emphasis on the market as transmission of knowledge and coordination of plans—rather than the Misesian emphasis on continuing coordination of *prices*; and the ultra-subjectivism of [Ludwig] Lachmann.”

Interestingly, Hayek himself sought to de-homogenize his work from that of free-market thinkers with whom he disagreed methodologically. In an interview in the 1980s he described Milton Friedman as a “logical positivist,” who “believe[s] economic phenomena can be explained as macrophenomena, that you can ascertain cause and effects from aggregates and averages. . . . [Friedman] is on most things, general market problems, sound. I want him on my side. You know, one of the things I often have publicly said is that one of the things I most regret is not having returned to a criticism of Keynes’s treatise, but it is as much true of not having criticized Milton’s [*Essays in Positive Economics*, which in a way is quite as dangerous a book.” Quoted in Hayek, 1994, pp. 144–45.

subject”—and this may have contributed to the variety of interpretations his work has aroused.<sup>26</sup> Partly for this reason, Hayek remains one of the most intriguing intellectual figures of our time.

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<sup>26</sup> On puzzlers and masters of their subjects see Hayek, 1975. Along with himself, Hayek named Wieser and Frank Knight as representative puzzlers, and Böhm-Bawerk, Joseph Schumpeter, and Jacob Viner as representative masters of their subjects. As Hayek (1975, p. 51) recalled, “I owed whatever worthwhile new ideas I ever had to *not* being able to remember what every competent specialist is supposed to have at his fingertips. Whenever I saw a new light on something it was as the result of a painful effort to reconstruct an argument which most competent economists would effortlessly and instantly reproduce.”

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The computer itself was born out of the minds of the many scientists, researchers, and mathematicians, with the first programmable computer, the Z1, being created between 1936-1938. From getting man to the moon to changing the way people communicate, the computer has helped mankind create a host of technologies that still play an integral role in our daily lives. Advertisement. The Radio. Occasionally underappreciated, the radio was one of the first major inventions of the 20th century. Invented in conjunction with many different scientists including Nikola Tesla and Guglielmo Marconi, the radio became the most used forms of communications in the world. The death of Queen Victoria in January 1901 and the succession of her son, Edward, marked the start of a new century and the end of the Victorian era. While Victoria had shunned society, Edward was the leader of fashionable elite which set a style influenced by the art and fashions of continental Europe—perhaps because of the King's fondness for travel. The era was marked by significant shifts in politics as sections of society which had been largely excluded from wielding power in the past, such as common labourers and women, became increasingly politicised. The Edwardian period is frequ Little is known about the life of English women in the Middle Ages, but without doubt it was hard. The Church taught that women should obey their husbands. It also spread two very different ideas about women: that they should be pure and holy like the Virgin Mary; and that, like Eve, they could not be trusted and were a moral danger to men. Such religious teaching led men both to worship and also to look down on women, and led women to give in to men's authority. Marriage was usually the single most important event in the lives of men and women. But the decision itself was made by the fam His analysis of socialist economics was proven prescient by the breakup of communist Eastern Europe. He shared the 1974 Nobel Memorial Prize in Economics with ideological rival Gunnar Myrdal, and in 1991 he received the Presidential Medal of Freedom.

Contents. 1 Biography. He was a student of Friedrich von Wieser. Initially sympathetic to socialism, Hayek's economic thinking was transformed during his student years in Vienna through attending Ludwig von Mises' private seminars along with Fritz Machlup, Oskar Morgenstern, Gottfried Haberler, and other young students. Hayek worked as a research assistant to Jeremiah Jenks of New York University from 1923 to 1924.