

# **Keynes, Hayek, and the Roots of Complexity Theory in Economics**

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## ABSTRACT

This paper explores the deep roots of complexity theory in economics. It looks at the great debate between John Maynard Keynes and Friedrich Hayek—both of whom used theories that presaged the complexity science approach. That debate, often defined as a debate between optimism and pessimism, is really about how they viewed the economic system. Both saw it as a “living” system of interacting parts, and both aspired to a global order. But Keynes saw the economy as a mechanism to be decoded and controlled, and believed that cultural refinement and technical prowess are mutually reinforcing. For Hayek, the economy is best left to its own self-organizing dynamics—even though the disequilibrium means every boom is eventually followed by a bust. Both arguments have merits and weaknesses, but an important paradox in Hayek’s position has become apparent over time: The free trade he promoted also allows economies to thrive that threaten the system of human values, and that protect sovereignty over human freedom.

*Keywords:* Keynes; Hayek; complexity theory; economics

# **Keynes, Hayek y las raíces de la teoría de la complejidad en la economía**

## RESUMEN

Este documento explora las raíces profundas de la teoría de la complejidad en la economía. Observa el gran debate entre John Maynard Keynes y Friedrich Hayek—ambos usaban teorías que

predijeron el método de la ciencia de la complejidad. Este debate, definido a menudo como un debate entre el optimismo y el pesimismo, se trata realmente de dos distintos puntos de vista del sistema económico. Ambos lo veían como un sistema “vivo” de partes que interactúan entre sí, y ambos aspiraban a un orden global. Pero Keynes veía la economía como un mecanismo que iba a ser decodificado y controlado, y creía que el refinamiento cultural y el poder tecnológico se refuerzan mutuamente. Para Hayek la economía se debe dejar sola para que actúen sus dinámicas de autoorganización-- aunque el desequilibrio signifique que cada crecimiento esté seguido por una caída. Ambos argumentos tienen sus méritos y puntos débiles, pero una paradoja importante en la posición de Hayek es se ha vuelto más aparente con el tiempo: el comercio libre que él promovía también permite que las economías que amenazan el sistema de valores humanos y que protegen la soberanía por encima de la libertad humana sean exitosas.

**Palabras clave:** Keynes; Hayek; teoría de la complejidad; economía

## 凯恩斯、哈耶克和经济学中复杂性理论的根源

### 摘要

本文探索了经济学中复杂性理论的根源深处。文章查看了约翰·梅纳德·凯恩斯和弗里德里希·哈耶克之间的激烈辩论，二者均使用了预示复杂性科学方法的理论。他们之间的辩论时常被定义为乐观主义和悲观主义间的论争，但实际上那次辩论讲述的是他们如何看待经济系统。凯恩斯和哈耶克都将经济系统视作一个由相互影响的各部分组成的“有生命力的”系统。并且他们都渴望全球秩序（的出现）。然而，凯恩斯将经济看作一个有待解密和控制的机制，他认为文化的改善和技术的非凡是相互促进的。对哈耶克而言，经济最好处于自组织的动态中——即使经济失衡意味着每次经济繁荣最终都将迎来萧条。他们双方的论断都有优缺点，但随着时间的推移，哈耶克论点中一个重要的悖论变得越发明显：不论是威胁人类价值系统的经济体，还是保护人类自由主权的经济体，自由贸易都允许其繁荣发展。

关键词：凯恩斯；哈耶克；复杂性理论；经济学

John Maynard Keynes (1883–1946) was known to his friends for infectious optimism. Contemporary political economy is infused with that optimism. Perhaps his most important legacy to political economy is his confidence that policy should elicit positive expectations about future opportunity. If you encourage a positive conception about the future, you may succeed in inducing behavior that ultimately reinforces those expectations (Keynes, 1949, pp. 161–163).<sup>1</sup> If you fail to inspire positive expectations, the worst kind of economic behavior, hoarding, will result. “The weakness of the inducement to invest, he writes in the *General Theory of Employment, Interest, and Money*, “has been at all times the key to the economic problem” (Keynes, 1949, p. 317).

Keynes linked global economic growth and global peace to confidence in the future. The propensity to investment hinges on the “delicate balance of spontaneous optimism” (Keynes, 1949, p. 152). The goal of economic policy, he wrote, is to encourage certainty about the economy’s prospects. When people lack certainty, they hold on to their cash and to whatever else they believe is a store of value. But in so doing, they cause others to lower their own expectations, and the economic horizon recedes for everyone. To remedy this propensity toward hoarding, Keynes suggested, a government can stimulate the stream of positive expectations through expansionist fiscal and monetary policy that would, in turn, induce

the stream of investments necessary for the attainment of a society’s highest aspirations.

Keynesian economics is fundamentally about finding and directing policy interventions toward the attainment of a positive set of expectations, i.e., finding the upper bounds for expectations about market growth. Expenditure creates its own income, and if individuals do not spend, the state is obligated to do so. By this reasoning, we can infer that “secular stagnation” was the natural condition of humanity throughout most of history. On that propensity to secular stagnation, Keynes writes, “It is impossible to study the notions to which the mercantilists were led by their actual experiences, without perceiving that there has been a chronic tendency throughout human history for the propensity to save to be stronger than the inducement to invest (Keynes, 1949, p. 317).” Thus he rejected the laissez faire policy approach just as he opposed revolution through violent change as being errors of pessimism.

His frequently cited article “Economic Possibilities for our Grandchildren” (Keynes, 1931), published in the early years of the Great Depression, voiced the case for optimism. What he called humanity’s “economic problem” would eventually be solved.<sup>2</sup> The fears of his contemporaries, that “the rapid improvement in the standard of life is now going to slow down,” would prove unfounded; and since that prediction almost a century ago, world econom-

1 Keynes’s discusses hoarding (Keynes, 1949, p. 174).

2 By “the human economic problem” Keynes seems to be referring to the basic human need for food and shelter, not the business cycle.

ic growth has been almost continuous and unprecedented. Keynes believed the essence of the economic problem of humanity was mechanical and could be expressed as a relationship between aggregate income and output, the price level, and total employment. The rate of interest and the volume of investment could be adjusted to attain the optimum level. As such, the business cycle and poverty could be solved through enlightened engineering if the government had the capacity and the objectivity to design and implement the appropriate stabilizing mechanisms.

Once the economic problem was solved, Keynes believed, humankind would be able to move beyond the struggle of mere subsistence and survival. The economic necessity of hunting and gathering, cooking, cleaning, and mending would occupy only a fraction of our time. We would no longer sweat for our daily bread; in fact, the problem for humanity would be “how to occupy the leisure, which science and compound interest will have won for him, to live wisely and agreeably and well.” Thus we can speak of a Keynesian utopia, and in fact Thomas More was an inspiration. So strong was Keynes’s optimism that he believed the permanent problem of the human race would be to unlearn the necessity for striving, to learn how to live the good life.

The most seductive notion contained in the Keynesian vision of the future is that the art of life would replace the means of life as the primary concern of humanity. The greatest fear he had for the future was that humanity would not

be ready to enjoy the abundance when it arrived. Critiquing the wealth of his own day, he noted how people wasted the bounty that was theirs to enjoy.

Keynes also warned that if the acquisition of material wealth should lose its social importance, the human race would face a new moral dilemma as well as a new evolutionary challenge, once Economic Man was dead and buried. In a world that lacks want, the pursuit of money for its own sake would become a vice, and we would no longer applaud and encourage those who blindly chase after riches. That kind of avarice would seem pathological even. Material success would instead, eventually, render societies more humane. We would all walk in the same path of virtue and wisdom, and engage in collective problem solving on a global scale.

Keynes hypothesized that the closer we are to solving the economic problems, the closer humanity would come to embracing common, shared human values. Although there is much in the contemporary political economy to refute Keynes’s optimistic projection that shared prosperity would pacify the divisive passions and interests of nations, Keynesian optimism about the future continues to animate contemporary social thought.

### **Keynesian Optimism and the Global Middle Class**

**H**arvard economist Larry Summers and Singaporean diplomat Kishore Mahbubani express Keynesian optimism about the

future in an article that appeared in *Foreign Affairs* (2016). They explain that a byproduct of globalization, the fulfillment of global consumer preferences, is leading to “increasingly overlapping areas of commonality” and causing a “fusion of civilizations” that ensures “the progressive direction of human history.” This has made the past three decades “the best in history” and will continue to lift “the human condition to heights never seen before.” Global middle-class culture has already converged in cuisine, where global influences have thoroughly penetrated Western kitchens,” remark Mahbubani and Summers (2016), “and something similar should happen across cultural sectors.” Other examples they note are the 36 million Chinese studying the piano, the 50 million learning to play the violin, and the 15 new opera houses that have opened. The satellite branches of Western colleges and universities in place around the world enable the spread of “best practices and good ideas from the West to the rest and increasingly from the rest back to the West.”

Mahbubani and Summers (2016) maintain that the progressive direction of human history, which has lifted the human condition to unprecedented heights, is set to continue just as Keynes envisioned, with the emergence of a large, well-educated, global middle class. (They project this class to increase, from 1.8 billion in 2009 to 3.2 billion in 2020, and 4.9 billion in 2030). Yet even if this were to happen, there are reasons to be skeptical that consumerism and the growth of the middle class will produce a unified global value system.

Here is the paradox given as a Chinese adage: “Same bed, different dreams.”

Although the examples they provide of this progressive trend are mostly cultural, Mahbubani and Summers (2016) disregard a greater cultural truth. In a globalizing world with many overlapping areas of commonality households with the same aspirations for physical well-being may also seek to attain those goals according to ethical codes based on very different ideas about the meaning of life, gender, the role of the individual, and the separation of church and state.

Mahbubani and Summers (2016) argue that it is the general public that is suffering disillusionment with globalism, as the concept is defined and dramatically disparaged by Western populist demagogues who exploit the plight of refugees or play on anti-austerity sentiments. There are, the authors concede, three reasonable sources of pessimism: turmoil in the Middle East, China’s economic slowdown, and stagnation of the world’s economies. They dismiss each of these scenarios as transitory and manageable, and certainly no cause for a dim prognoses of globalization prospects.

Yet, during the past two decades, while incomes in the developing world grew at rates that far exceeded anything previously recorded and the size of the middle classes increased spectacularly, global democracy indicators receded and the most frequently used indexes to track it downgraded the democratic status of many emerging nations. Autocracies have become more autocratic,

democracies less democratic, and the quality of public-sector management has deteriorated. No wonder that the world is in the grip of another bout of pessimism caused by fears of sociopolitical instability, similar in many ways to that of Europe and North America of the 1930s.

Keynes mused that just as we once abandoned ties to a tribe, we may be tempted to abandon conventional approaches to collective security, such as that derived from the nation state, in favor of some kind of transcendent global identity that resides in transnational institutions. But did prosperity lead Britons to empathize and identify with European institutions, norms, and culture? Did economic integration lead the Turks to embrace Europe's enthusiasm for political pluralism? Did the pain of economic sanctions deter Putin's quest for global status and regional primacy? Even as production, commerce, and finance are organizing globally, social identity is reluctant to follow suit. The idea of a global civil society vies with national symbols of modernity. Globalization itself is fertile ground for populist challengers like Donald Trump, Nigel Farage, Rodrigo Duterte, and Marine Le Pen. Behind the rise of each of these political figures is a concern by voters to restore the nation state in order to preserve the social fabric. Could it be that constructing a social identity on the logic of fiscal and commercial interests

is, after all, nothing but what the late historian Tony Judt called "a grand illusion"? In his prescient 1995 essay, Judt used that very phrase to describe the "reductionist fallacy, the curiously nineteenth-century belief shared by classical economists and Marxists alike, that social and political institutions and affinities naturally follow economic ones" (Judt, 1995, p. 119).

Rapid income catch up among the fastest-growing economies—China, India, Russia, Saudi Arabia, and South Africa—is producing a common set of materialistic preferences, but is this enough to establish a claim for a global civilization when it does not include a shared outlook in such matters as individual rights or the role of the state. More income does not necessarily lead individual citizens down a one way street toward democratic values and norms, it does not make them more receptive to the kind of electoral contestation fostered in democratic political settings.<sup>3</sup>

In sum, Mahbubani and Summers (2016) perceive social change being in line with global growth dynamics, not realizing that those dynamics may contain the seeds of dissolution. They overlook that democratic liberalism and the rule of law—the social change processes with which globalism is associated—have failed to achieve legitimacy in much of the world. While the

3 Living at the height of the British Empire, Keynes can be criticized for limiting his vision to Christians and the West. He was writing chiefly for the West, in the middle of the Great Depression and later world war, at a time when the major powers still held many colonies. "Perhaps it is not an accident," he wrote, "that the race which did most to bring the promise of immortality into the heart and essence of our religions has also done most for the principle of compound interest and particularly loves this most purposive of human institutions" (Keynes, 1931).

global economy grows more complex, not all countries that have embraced global trade and investment are making progress toward embracing other, more humane goals of a free society.

Instead of helping emerging states develop restraining institutions, the spread of global consumerism has given rise to strongmen who tout non-Western values and identities. True, there are exceptions: Spain, Chile, and South Korea seem to confirm that authoritarian countries tend to democratize as they join in global production. But linear extrapolations can mislead us into believing that global development will lead *all* nations toward a common destination. China's rapid rise reveals that the liberal trading regime can be exploited by nations seeking to advance their own economic advantages without embracing the other virtues associated with a free society.

Should we depend on consumerism to overcome the differences among nations? In Chapter XIV of *the Road to Serfdom* (1944), where Hayek discusses the prospects for global social collaboration, he explains why "claims for social reconstruction" that are "almost all economic in character" can do great harm (Hayek, 1994, p. 202). Such claims that the end of economic scarcity is within our grasp may lead us to become tolerant of abuses and to accept justifications for even gross violations of elementary rights of individuals.

If we see government as merely a producer of goods and services, what happens to ethical values and the preservation of freedom and restraint?

If the fusion of civilization is to be attained through the fulfillment of the consumer preferences of the global middle class, then what if its preference function does not include liberty? The real challenge for the fractured political economy of today is not merely to fulfill existing materialist preferences, but to encourage better preferences.

### **Enter Hayek: The Pessimist's Reply to the End of Economic Man**

**T**he economist Friedrich Hayek (1899–1992), whose ideas are expressed in many books and articles, has assumed an immortality as the counterpoint to Keynes. The two are a pair. In contrast with Keynes, who was grounded in his native Cambridge, Hayek was an intellectual vagabond. His family's wealth was destroyed during World War I, and he left his native Austria for England. When he eventually left Europe in 1950, his sojourns took him to UCLA, the University of Chicago, and eventually to the German university city of Freiberg, where he spent his final years. His ideas were never institutionalized like those of Keynes by mainstream global organizations. He was without a country and without a home in his discipline. At the University of Chicago, while his academic home was the Committee on Social Thought, he nevertheless became a Nobel Prize laureate in economics.

Hayek took a less popular approach to humanity's economic prob-

lem. Some may call it pessimistic; others would call it realistic. There is no reason to believe that Keynes's "economic problem of the human race" should ever be solved, Hayek wrote, and even in aspiring to solve it, we put our larger human values of independence and self-reliance at risk. Hayek summons us to buttress our most human values first and seek to fulfill our human potential even before, and regardless of, the economic costs. Hayek believed that assertions about "potential plenty" were based on pseudo-theories. Do not put liberty and freedom on hold, waiting for a solution to the economic problem. Human virtues don't derive from solving the "economic problem," but from making choices freely in the face of scarcity. He cautions against thinking of inevitable tendencies toward a frictionless world in which freedom for the individual is the guiding inspiration of government.

In other words, Hayek saw the world the other way around, insisting that liberty and freedom be primary for the individual before comfort, for they will instill a willingness to bear risks.<sup>4</sup>

Hayek seems to have a broader idea of risk-taking than the Keynes concept of hoarding versus investing. Waiting for a time that sees an end to toil may even blunt our moral senses and produce a society prone to collectivism and to supine behavior and corrupted values, a society that would have little taste for individual responsibility and individual social action. "Freedom to order our own conduct in the other sphere where material circumstances force a choice upon us, and responsibility for the arrangement of our own life according to our own conscience," he wrote in *The Road to Serfdom* (1944), "is the air in which alone moral sense grows and in which moral values are daily recreated in the free decision of the individual. Responsibility, not to a superior, but to one's conscience, the awareness of a duty not exacted by compulsion, the necessity to decide which of the things one values are to be sacrificed to others, and to bear the consequence of one's own decision, are the very essence of any morality which deserve the name" (Hayek, 1994, p. 212).

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4 Nevertheless, he saw a role for the state to provide a minimum level of social insurance for all. In *The Road to Serfdom* he wrote, "[T]here can be no doubt that some minimum of food, shelter, and clothing, sufficient to preserve health and the capacity to work, can be assured to everybody. ... Nor is there any reason why the state should not assist the individual in providing for those common hazards of life against which, because of their uncertainty, few individuals can make adequate provision. ... Where, as in the case of sickness and accident, neither the desire to avoid such calamities nor the efforts to overcome their consequences are as a rule weakened by the provision of assistance—where, in short, we deal with genuinely insurable risks—the case for the state's helping to organize a comprehensive system of social insurance is very strong. There are many points of detail where those wishing to preserve the competitive system and those wishing to supercede it by something different will disagree on the details of such schemes; and it is possible under the name of social insurance to introduce measures which tend to make competition more or less ineffective. But there is no incompatibility in principle between the state's providing greater security in this way and the preservation of individual freedom" (Hayek, 1994, pp. 148–149). The paradox of big government and high-tax libertarianism is being explored by John Meadowcroft at Kings College London's Department of Political Economy.



## Creating World Order: Global Public Policy According to Hayek

It is no secret that the international financial institutions, such as the International Monetary Fund, identify more with Keynes than Hayek. His ideas contributed to the progressive idealism underlying the construction of world order via institutions like the United Nations, the World Bank and the IMF after World War II. But what if Hayek, and not Keynes, had been the influence and inspiration at Bretton Woods in 1944? Surely, the policy preferences and the institutions of the postwar international order would have differed. Hayek would not have aspired to attain collective security via global institutions that were inclusive of all regime types.

Certainly, Hayek aspired to global order, as seen in his views in favor of a global currency, but it would have been an order that emerges, rather than one born of government planning. His belief that heterogeneity among the participants would make resource management more problematic.<sup>5</sup> “[A]s the scale increases, the amount of agreement on the order of ends decreases and the necessity to rely on force and compulsion grows,” he wrote in *The Road to Serf-*

*dom* (Hayek, 1994, p. 222). “In a small community, common views on the relative importance of the main tasks, agreed standards of value, will exist on a great many subjects. But their number will become less and less the wider we throw the net: and, as there is less community of views, the necessity to rely on force and coercion increases” (Hayek, 1994, p. 222). At Bretton Woods, he likely would have argued for building order on affinities, not compulsion.

Hayek explained that “to undertake the direction of economic life of people with widely divergent ideals and values is to assume responsibilities which commit one to the use of force; it is to assume a position where the best intentions cannot prevent one from being forced to act in a way which to some of those affected must appear highly immoral” (Hayek, 1994, p. 223). Extending this reasoning to the potential of international order, we can hypothesize that he would have preferred a smaller, tighter foundation in order to encourage closer association of those countries more similar in their “civilization, outlook, and standards” (Hayek, 1994, p. 238). His conception of order would be an association of like-minded democracies that other nations could aspire to join once there is convergence to a commonality of values.<sup>6</sup> But he

5 The question Hayek raised about coordination of views among diverse constituents has significant implications for the construction of an effective global order. It surfaces today, in discussions on the virtues of a Tobin tax on global financial/currency flows. Many international development professionals believe it is needed to fund international public goods; it would be easy to collect, given current technology—but agreeing on how to spend it would be the real conundrum of global governance.

6 Hayek seems to have anticipated Brexit when in 1944 he wrote, “The English people, for instance, perhaps more than any others, begin to realize what such schemes [economic planning that encompasses Western Europe] mean only when it is presented to them that they might be a minority in

never used the term convergence. “The conflict between planning and freedom cannot but become more serious,” he wrote, “as the similarity of standards and values among those submitted to a unitary plan diminishes” (Hayek, 1994, pp. 221–222).

There is a paradox in Hayek’s position that has become more apparent over time. The free trade that Hayek promoted also allows economies to thrive that threaten the system of human values that created a world order. The free liberal trade regime has produced a shift in global economic power that enables the enemies of liberty to obtain resources that place democratic regimes and values at risk, and has enabled the enemies of democracy and freedom to grow strong enough to exploit the liberal order that enriched them and to threaten the heartland and cradle of freedom. To contain that risk and protect those values, the strong global institutions that he decried seem inescapable.

For Hayek, the international rule of law must safeguard not only the individual from the tyranny of the state, but states from the tyranny of global organizations.<sup>7</sup> “We shall never prevent the abuse of power,” he wrote, “if we are not prepared to limit power in a way which occasionally may also prevent its use

for desirable purposes” (Hayek, 1994, p. 236). Yet unless the parties agree on fundamental values, they will either prove inept or resort to violence to attain their will; and the arrangement that could become permanent is instead one that protects sovereignty rather than human freedom.

Where do these two icons of contemporary economic thought divide most substantively? It is where they draw the line between economy as a mechanism that can be decoded and controlled as contrasted with the notion that the economy self-organizes according to its own rules of complexity. Keynes was optimistic that cultural refinement and technical prowess are mutually reinforcing. For Hayek, it is not machinery or refined attitudes, but individual freedom that is the ultimate gift of civilization and that this requires independence, self-reliance, and local responsibility, regardless of whether the economic problem is, or ever will be, solved.

## **If Economics had Followed Hayek**

**T**he concerns set forth in the preceding section became even more central to Hayek as his thinking matured. His later work raised

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the planning authority and that the main lines of the future economic development of Great Britain might be determined by a non-British majority” (Hayek, 1944, pp. 222–223).

7 “An international authority which effectively limits the powers of the state over the individual will be one of the best safeguards of peace,” wrote Hayek. “The International Rule of Law must become a safeguard as much against the tyranny of the state over the individual as against the tyranny of the new superstrate over the national communities” (Hayek, 1944, p. 236). Obviously, a China that has grown rich through foreign trade and investment by exploiting the resources under authoritarian governance of pariah regimes will not accept the guiding principle of individual freedom as the foundation of global order.

perspectives on knowledge diffusion, emergence, systems theory, cognition, evolution, and agent behavior not explicitly posed in his earlier, more popular *Road to Serfdom*. Emergence and complexity became an important focus of his later thought.<sup>8</sup> The mature Hayek envisioned a society of free individuals with processes of self-organization and complex social emergence. Although he did not use its language, his thinking (Hayek, 1952, 1967) places him close to the core concerns of contemporary research in complexity science in the following ways<sup>9</sup>:

(1) Hayek's vision of economic and political liberty was closely connected to his belief that social order emerges through processes of self-organization out of the interactions of dispersed, heterogeneous agents; that "if left free, men will often achieve more than individual human reason could design or foresee" (Hayek, 1948, p. 11). He lamented the inadequacy of conventional social science research methods for addressing problems of economic policy and moral philosophy, based as they were on models of linear change. He emphasized that constant interactions and adaptive reactions among agents are what generate changes in the larger system.

(2) He sketched out an idea, elaborated later by Herbert Simon's

"bounded agent rationality." For Simon, the limitation arises in decision making because when making a decision, people don't maximize on only one dimension: They consider outcomes on different dimensions that must be traded against each other (Simon, 1969, p. 54). Hayek recognized that knowledge is distributed among interacting agents, but not equally throughout the system. This "bounded" knowledge was a constant in his thinking: human cognition "cannot be guided ... by full knowledge and evaluation of all the consequences" (Hayek, 1948, p. 19). Recent findings in evolutionary social psychology emphasize that local culture, community, acquired beliefs, and institutions are the filters through which people frame essential issues. People do not consider all information when making decisions because they search for new information selectively and are vulnerable to biases, dismissing information that contradicts their personal or collective goals.

(3) In his later years, Hayek went against the grain of the economics profession and its embrace of equilibrium-based methodologies. Instead, he increasingly referred to social agents co-evolving and adapting continually in a decentralized space, and with distributed knowledge, producing an economy without equilibrium and comprising many interacting parts that

8 Hayek's interest in emergence and complexity is documented in Caldwell (2004), p. 221, pp. 270–272, and p. 309. J. Barkley Rosser (2015) discusses complexity in the writings of Austrian economists.

9 "The 'emergence' of 'new' patterns as a result of the increase in the number of elements between which simple relations exist," wrote Hayek, "means that this larger structure as a whole will possess certain general or abstract features which will recur independently of the particular values of the individual data, so long as the general structure (as described, e.g., by an algebraic equation) is preserved" (Hayek, 1967, p. 26).

change over time (Hayek, 2012, pp. 338–339).<sup>10</sup>

(4) He emphasized that social order emerges without a central “controller” or a global optimum design, and with “no captain at the helm” (Root, 2013, pp. 217–235). The idea of a central controller or that a small number of influential thought and culture leaders can control and direct social process jars with a belief in cognitive fallibility.

(5) He recognized that early cultural adaptations or mutations can place a population on paths that differ from the prior and unique circumstances that paved the way for Western development. In any ecology, multiple adaptive peaks are possible. Populations, he suggested, are more likely to reach the highest adaptability along a local trajectory than by switching from one adaptive peak to another (Hayek, 1976, p. 27).

(6) Hayek postulated that laws belonging to “lower,” more fundamental levels of a system cannot be used to reconstruct the universe in which they form only one part. Transplanted institutions rarely survive. In this sense, social institutions, such as the state, are not built; they grow. Thus Hayek sought a public policy designed “to cultivate growth by providing the appropriate

environment, in the manner in which the gardener does this for his plants” (Hayek, 1989, p. 7). This stands in contrast with Keynes’s notion (1931) that in the future, economics would surrender its place of importance to “matters of greater and more permanent significance” and would become both a mundane and technical” matter for specialists—like dentistry” (1930).

(7) When Hayek refers to the “impersonal and anonymous social processes by which individuals help to create things greater than they know,” and when he described outcomes that are not products of individual reason or “consciously designed ... or ... fully intelligible to it” (Hayek, 1948, p. 8), he is describing what modern evolutionary science calls *emergence*. For him, as for contemporary complexity science, emergence is the most dramatic process in the course of human interactions, often resulting in outcomes that lie outside of the range of human intention and beyond the precognition of the agents.

(8) He was skeptical of social engineering, based on his understanding that perception and cognition are bottom-up processes. Yet he also saw a dynamic relationship between top-down and bottom-up *causality*, e.g., in his

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10 “It is tempting to describe as an ‘equilibrium’ an ideal state of affairs in which the intentions of all participants precisely match and each will find a partner willing to enter into the intended transaction. But because for all capitalist production there must exist a considerable interval of time between the beginning of a process and its various later stages, the achievement of an equilibrium is strictly impossible. Indeed, in a literal sense, *a stream can never be in equilibrium*, because it is disequilibrium which keeps it flowing and determining its directions. Even an apparent momentary state of balance in which everybody succeeds in selling or buying what he intended, may be *inherently* unrepeatable, irrespective of any change in the external data, because some of the constituents of the stream will be results of past conditions which have changed long ago” (Hayek, 2012, pp. 338–339).

writing about how the creation of money altered the behavior of agents and organizations (Rosser, 2015). The theme of downward causation cannot be disregarded when reflecting that throughout history there are instances when states that win wars are positioned to decide the legitimate order for other states and, in certain rare cases, might change the order or ecology in which those states exist. It is this process that explains the conflict between the United States and China, as each nation tries to influence the world around it in a way that ensures its own survival.

(9) The later Hayek expressed ideas about cultural evolution that are often misconstrued and criticized, incorrectly, on the grounds that he presumed that evolution through self-organization is a process that produces optimal fitness. In fact, he repeatedly distanced himself from the view that something is efficient because it exists (Whitman, 1998). Cultural evolution in the later Hayek shares with evolutionary biology an understanding that sub-optimal or maladapted traits, and the politics or cultures in which they reside, can persist for long periods of time.

Bounded rationality, dispersed knowledge, self-organization, cognitive limitations, ecologies with no central controller—these ideas that are central concerns of Hayek are also core premises of complexity approaches in economics. These were all ideas that were derived from his belief that the market economy is an information-increasing algorithm in which spontaneous order arises from the independent action of

market participants, through the coordination made possible by prices. Hayek's foundational contributions to economic reasoning can stand on their own, as distinct from assumption that is attributed to him, that all forms governmental activism will inevitably end in a loss of freedom for the individual (Bowles, Kirman, & Sethi, 2017).

## A Tangled Global Web and Hayekian Epistemology

In Hayek's thinking about the relationships between spontaneous order and emergence, he understood implicitly that tangled networks of human interaction foster heterogeneity and thereby create new opportunities for novelty, innovation, and entrepreneurship, and that the heterogeneity would bring more risk and conflict. Nevertheless, his own research did not explore the tangled webs of relationships found in complex global ecologies. Advances in evolutionary biology and network theory that explore tangled ecologies and their properties occurred primarily after Hayek had completed most of his life's work.

*The Road to Serfdom*, for example, is a study of contemporary politics in 1944, when the enemies of liberty were heterogeneous, but self-declared. Threats to individual liberty could be readily identified during the long war between liberalism, socialism, and fascism that ended with the collapse of the Soviet Union. Today, however, when many capitalist societies are mixed regimes and former socialist regimes are

free traders, the differences between central planning and free markets are not so easily identified. In the tangled order of today, many layers of connections exist between liberal and illiberal polities. China, for example, embraces classical liberalism's ideal of complex economic interdependence, yet its internal policies are at variance with the social norms and rules that are generally associated with a free economy. Economic development attained through trade and investment has enabled greater political repression and a closed political system

Introducing *The Road to Serfdom's* fiftieth-anniversary printing in 1994, Milton Friedman wrote that "the free market is the only mechanism that has ever been discovered for achieving participatory democracy" (Hayek, 1994). But the powerhouse economies of China and Singapore suggest instead that the connection between economic and political liberty is far more complex, and that it is not possible to predict the existence of one form of liberalism from the observation of the other.

So accustomed are we to interpreting Hayek and Keynes in terms of poles that we overlook several important shared characteristics of their thinking. Both hypothesize an automatic adjustment or convergence toward an ideal, coordinated state, once frictions are removed. For Keynes, these frictions are uncertainty about the future. To overcome them, he believed in nudges, and rather big ones if necessary, to get the animal spirits moving and stimulate economic actors, both

investors and consumers, to open their pockets. Yet he doubted that there is an optimal move, and feared that uncertainty could become wildly contagious and self-reinforcing as it spread from one market participant to another. He could never have been persuaded that rational beliefs drive markets to equilibrium. In his world, the players in the market are not only unable to accurately know what the state of the world is, they could not know what other traders knew. Thus they are compelled to act on the basis of their subjective convictions and upon their subjective notions of what the other believed. As each agent gauges the probable behavior of others, uncertainty begets uncertainty. A rich psychology emerges of divergent and contradictory forecasting convictions among traders, and this moves the market to exhibit complex and rapidly episodic alternative states. Rapid propagation of change through the interconnected behaviors of heterogeneous agents is the core issue being pursued in complexity economics to understand the volatility of financial markets. Keynes is a precursor of this approach.

Hayek was more confident than Keynes that society would converge to its most desirable shape if left to its own. He anticipated that self-organization, or "spontaneous order," that arose from the behavior of rational self-interested individuals would lead to a satisfactorily coordinated state. Thus, Hayek is identified with the belief that a society will self-organize into a desired state without the government imposing it. Ironically, both scholars emphasized that a self-adjusting economy requires a

solution to the problem of information asymmetry. Keynes believed the solution required deliberate engineering, Hayek that it was a naturally emerging property of free social intercourse. Subsequent economists thought that such a state was an equilibrium condition toward which economies naturally trended. But neither socialist nor capitalist economies, according to Joseph Stiglitz in *Whither Socialism?* (Stiglitz, 1994), will ever solve that problem.

From the perspective of recent findings about social organization influenced by complexity theory, there is inconsistency in the thinking of both Keynes and Hayek. For Keynes, human behavior is not mechanistic, and because of human irrationality the economy operates in a probabilistic manner; yet he defines the role and influence of economic policy on human beings in mechanistic terms.

Where Hayek's thinking diverges most from current findings in complexity theory is the presumption that social movements start at the top and then spread downward from the heights via the efforts a small group of influential players. Keynes also held the belief that change begins at the top due to the influence of rare, highly connected people with the capacity to spread their memes throughout society. Belief that a small minority of opinion leaders has an undue influence on everyone else has been conventional wisdom in many fields. Yet research on social networks by Duncan Watts and others reveal that information travels through more dispersed and less easily programmed

channels (Watts & Dodds, 2007). Ideas will propagate in society because of the way the networks in which they travel are constructed. This perspective has given rise to research that focuses less on who people influence or on the independent behavior of the influential few, and more on networks and the self-organizing processes to which networks are prone.

Economist Alan Kirman concludes that "Hayek did no better than those he opposed in explaining precisely how the system self-organizes into a satisfactorily coordinated state. So, curiously, Hayek's premonitory vision of a complex system ran into exactly the same problem as that which blocked the progress of general equilibrium—the lack of any mechanism that would bring it into (in his case) a coordinated state and, in the case of general equilibrium theory, an equilibrium state" (Kirman, 2016, p. 556).

General equilibrium theory became the lens through which economists since the 1970s have assessed the change processes in an economy. In the mainstream models, uncertainty is exogenous and change is additive. An unwarranted assumption persists: that unfettered agents can achieve adjustments that will restore the economy to an equilibrium state. Thus the Bretton Woods institutions advocate structural adjustments and stabilization policies to bring actual economies around the world closer to an idealized, efficient state. But this leaves the coordination problem still fundamentally unsolved. Economists still struggle to find the

mechanism that enables individuals in an economy to self-organize into a state that solves their coordination problems.

## **Global Political Economy in a Complexity Frame**

**T**he Keynes–Hayek debate for a long time been the virtually unquestioned framework for what an educated person needed to know about economic change. Both formulated theories of risk and uncertainty in their differing responses to the problem of the business cycle and GDP. Keynes thought we could manage our way out of it by stimulating demand, until the level of investment would be sufficient to surmount the “economic problem” itself and provide permanent abundance. His conception of the economy was fundamentally derived from mechanical notions of order. This is captured in his famous remark, that the job of the economist of the future will be no different from that of a dentist.

Pessimism was Hayek’s compass. He believed that when relative prices changed because of the “natural” forces of technology, tastes, time preference, etc., the ensuing adjustments would enable a coordinated plan. But monetary stimulus distorts the signals or relative prices needed to formulate a coordination plan by distorting the rates of return on certain types of economic activity; and those abnormal rates of return can only be sustained as long as additional monetary stimulus

continues. This is not a stable equilibrium, so eventually every boom will be followed by a bust.

## **Conclusion: Is the Road to the Future Mechanistic or Organic?**

**I**n the thinking of both Keynes and Hayek the economy operates in a probabilistic manner. Keynes wrote about animal spirits, herd instincts, and the irrational compulsion toward hoarding through which he thought an economy could take on a life of its own and thus show organic life. However, his optimism stemmed from confidence that an economy, like a mechanism, could be “controlled,” that its parts could be engineered for maximum efficiency, and that constant economic growth could be similarly engineered with the appropriate sets of policies. He did not believe in wholesale social engineering, but in piecemeal, gradual reform and feared that social engineering could also be used for evil.

Hayek likewise believed that an economy is organic, but an “organism” that could never be controlled with tools based on rational mechanics (for no matter how sophisticated the tools, they could eventually be exploited) and whose every cycle of renewal will be followed by a bust.<sup>11</sup> Hayek’s pessimism came from his doubts that humankind would ever possess the mechanisms or knowledge to control the self-organizing cycles of economic growth and decline. He had a sense of what scientists

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11 For example, Hayek believed that monetary expansion during downturns artificially raises the rates of return on certain types of economic activity, and that return rates can only be sustained as long as additional monetary stimulus is forthcoming.



today call complex adaptive systems. We have learned much more about the qualities of self-organizing systems, and how complexity arises, since Hayek's time. We are only just learning how to apply it to understand social change and economic transitions.

## References

- Bowles, S., Kirman, A., & Sethi, R. (2017). Retrospectives: Friedrich Hayek and the market algorithm. *Journal of Economic Perspectives*, 31(3), 215–230.
- Caldwell, B. (2004). *Hayek's challenge: An intellectual biography of F.A. Hayek*. Chicago: University of Chicago Press.
- Hayek, F. A. (1948). *Individualism and economic order*. Chicago: University of Chicago Press.
- Hayek, F. A. (1952). *The counter-revolution of science: Studies on the abuse of reason*. University Park: Liberty Fund Inc.
- Hayek, F. A. (1967). The theory of complex phenomena. In *Studies in philosophy, politics, and economics* (pp. 22–42). Chicago: University of Chicago Press.
- Hayek, F. A. (1976). *Law, legislation and liberty, Vol. 2: The mirage of social justice*. Chicago: University of Chicago Press.
- Hayek, F. A. (1989). The pretense of knowledge. *American Economic Association*, 79(6), 3–7.
- Hayek, F. A. (1994). *The road to serfdom: Fiftieth anniversary edition*. Chicago: University of Chicago Press.
- Hayek, F. A. (2012). The flow of goods and services. In H. Klausinger (Ed.), *The collected works of F. A. Hayek. volume 8. Business cycles. Part II* (pp. 331–346). Chicago: University of Chicago Press.
- Judt, T. (1995). *A Grand illusion? An essay on Europe*. New York: Hill and Wang.
- Keynes, J. M. (1931). Economic possibilities for our grandchildren (1930). In *Essays in persuasion*, 358–374. London: Macmillan.
- Keynes, J. M. (1949). *The general theory of employment interest and money*. London: Macmillan.
- Kirman, A. (2016). Complexity and economic policy: A paradigm shift or a change in perspective? A review essay on David Colander and Roland Kupers's complexity and the art of public policy. *Journal of Economic Literature*, 54(2), 534–572.
- Mahbubani, K., & Summers, L. H. (2016). The fusion of civilizations: The case for global optimism. *Foreign Affairs*, 95, 126.
- Root, H. L. (2013). *Dynamics among nations: The evolution of legitimacy and development in modern states*. Cambridge: MIT Press.

- Rosser, B. J. Jr. (2015). Complexity and Austrian economics. In *The oxford handbook of Austrian economics*. New York: Oxford University Press.
- Simon, H. A. (1969). *The Sciences of the artificial* (1<sup>st</sup> ed.). Cambridge: MIT Press.
- Stiglitz, J. E. (1994). *Whither socialism?* Cambridge: MIT Press.
- Watts, D. J., & Dodds, P. S. (2007). Influentials, Networks, and public opinion formation. *Journal of Consumer Research*, 34(4), 441–458.
- Whitman, D. G. (1998). Hayek contra pangloss on evolutionary systems. *Constitutional Political Economy*, 9, 45–66.