

## Some Limitations of the Socialist Calculation Debate

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### Abstract

One of the most important debates in the history of economics is known as the ‘socialist calculation debate.’ It was initiated in 1920 by the Austrian school economist Ludwig von Mises and continued by Friedrich Hayek, who forcibly criticised the schemes for socialist planning developed by Oskar Lange, Henry Dickenson and others. But the earlier critique of socialism by the German historical school economist Albert Schäffle has been largely overlooked. Furthermore, the rightful emphasis on the role of information and knowledge in the Austrian case ironically suggests some limits on property and markets, as well as endorsing their continuing importance. This essay points to the neglect of the detailed character of institutions on both sides of the debate. Not only were adequate notions of property and exchange absent from the general equilibrium theory used by the socialists in their attempted justifications of planning, but they were also threadbare on the Austrian side. Hence, ironically, the Austrian defence of capitalism was inadequate.

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One of the most important controversies in the history of economics – known as the socialist calculation debate – was initiated by the Austrian school economist Ludwig von Mises (1920; 1935; 1981) and continued by Friedrich Hayek (1935; 1944; 1948; 1988).<sup>1</sup> At the peak of the controversy, Hayek criticized neoclassical economists, such as Oskar R. Lange (1936–37; Lange and Taylor 1938) and Henry Dickenson (1933 and 1939), who used general equilibrium theory to model their socialist proposals. These Austrian school economists effectively undermined general equilibrium theory and successfully rebutted socialism, at least as originally defined.<sup>2</sup>

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<sup>1</sup> This article makes use of some material from Hodgson (2015a).

<sup>2</sup> The classic definition of socialism, by Robert Owen, Karl Marx and others, was in terms of comprehensive economic planning, without any private property (Hodgson 1999).

The Austrian school underlined the nature and role of knowledge, especially in regard to incentives, innovation and entrepreneurship. Lange, Dickenson and others sidelined these issues. Revaluations of the debate have overturned the preceding consensus that von Mises and Hayek were on the losing side. They have established that Lange and his followers did not adequately answer the criticisms of von Mises and Hayek in the debate, and they failed to provide a satisfactory outline of a workable and dynamic socialist system.

Some excellent overviews of this debate exist.<sup>3</sup> So what can be added here? First, the historical account is incomplete unless the ubiquitous omission of the earlier critique of socialism by the German historical school economist Albert Schäffle is included. Second, I propose that the rightful emphasis on the role of information and knowledge in the Austrian case ironically puts some limits on property and markets, as well as endorsing their vitality and strength. Third, I point to the neglect of the detailed character of institutions on both sides of the debate. Not only were adequate notions of property and exchange absent from the general equilibrium theory used by the socialists in their attempted justifications of planning, but they were also threadbare on the Austrian side. Both sides failed to underline the importance of key mediating institutions between the individual and the state. Hence, ironically, the Austrian defence of capitalism was inadequate.

Both sides conflated property with possession and regarded exchange as a universal and ahistorical phenomenon (Heinsohn and Steiger 2013; Hodgson 2015a and 2015b). Both sides overlooked key aspects of capitalism, paying insufficient attention to the peculiarities of employment contracts and the capitalist financial system.<sup>4</sup> Many Austrian school writers treated markets in a de-institutionalized manner, as the ether of all meaningful human interaction. Neither side paid adequate attention to historically specific institutional, legal, and statutory arrangements that make property, contracts and hence markets possible. In short, neither group probed sufficiently the institutions of capitalism, but the assessment of this system should have been a major factor in the debate.<sup>5</sup>

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<sup>3</sup> See Vaughn (1980), Murrell (1983), Lavoie (1985a; 1985b), Steele (1992) and Boettke (2000; 2001) for good discussions of the debate.

<sup>4</sup> On the employment contract see Hodgson (2005b; 2015a).

<sup>5</sup> Market economies are much older than capitalism, namely the historically-specific institutional system that powered a massive increase in the production of wealth from about 1800. Financial institutions, particularly involving the extensive collateralization of property and markets for debt, developed fully in the 1700s (Hodgson 2015a). These were crucial for the capitalist take-off, and arguably should be part of its definition. In Hodgson (2015a) I argue that Austrian, neoclassical and Marxist economists have inadequate conceptions of money and financial institutions.

## 1. Schäffle's Critique of Socialism

Despite their importance, accounts of the socialist calculation debates rarely appear in economics textbooks. Even worse, the remarkable earlier contribution of Schäffle has been almost entirely ignored, even by historians of economic thought.<sup>6</sup>

In a series of works, Schäffle (1870; 1874; 1885; 1892; 1908) explored the limitations of socialism. The first of these was fifty years before von Mises's seminal article. Unlike some members of the Austrian school, Schäffle did not argue that socialism was impossible. Instead, he focused on the difficulties of organizing and planning a collectivist system. He identified problems concerning individual incentives for work and innovation within large groups, and how shirking could be minimized. Schäffle (1908, 57) considered a society with a million workers:

My income from my social labour is conditional upon my 999,999 co-operating comrades being as industrious as I. ... Socialism would have to give the individual at least as strong an interest in the collective work as he has under the liberal system of production ...

This problem of incentives with large numbers haunts any socialist scheme of large-scale cooperation. If everything is shared, then incentives for extra individual effort or innovation can be much less than likely rewards. The extra effort of a single individual is rewarded less as  $n$  increases. I call this the  $1/n$  problem. At low values of  $n$ , such as in a family or small cooperative, incentives to work hard can be enhanced by face-to-face mechanisms involving reciprocity, trust, commendation, satisfaction, shame, scorn or punishment. At higher levels of  $n$  these interpersonal mechanisms become relatively less effective.<sup>7</sup>

This point was illustrated dramatically in post-Mao China, when from about 1978 peasant farmers began to withdraw from large collective farms and take responsibility for production and revenue from output at the household level. China's explosive economic growth began with those changes (Zhou 1996; Oi 1999; Coase and Wang 2012).

Schäffle (1908) also contended that a system based on calculations concerning labour time faced intractable problems, including the heterogeneity of labour and the inaccessibility of relevant data. Measuring labour inputs in this way would also undermine individual incentives to increase productivity.

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<sup>6</sup> Discussions of rare instances where Schäffle's critique of socialism has been mentioned, plus some reasons for the widespread neglect of his contribution, appear in Hodgson (2010).

<sup>7</sup> The term ' $1/n$  problem' was suggested to me by Bob Rowthorn in 1992. It is not the only argument against large-scale socialism, but it is simultaneously one of the most simple and profound.

Schäffle (1885 and 1892) argued that a state collectivist system of production could minimize these severe and large-scale incentive and monitoring problems only by the exercise of central authority, thus undermining any egalitarian or democratic distribution of power. Hence, he saw socialism administered by democratic means as unfeasible. As Schäffle (1892, 37) wrote in 1885: “collective production without firm hands to govern it, and without immediate individual responsibility, or material interests on the part of the participators” is “impossible for all time.” Schäffle (1892, 73) elaborated:

Without a sufficiently strong and attractive reward for individual or corporate pre-eminence, without strongly deterrent drawbacks and compensatory obligations for bad and unproductive work, a collective system of production is inconceivable, or at least any system that would even distantly approach in efficiency the capitalistic system of today. But democratic equality cannot tolerate such strong rewards and punishments.

Schäffle thus presented socialists with a severe dilemma: they must choose between socialism and democracy. They cannot have both. With the benefit of hindsight, after the twentieth century attempts to establish socialism in Russia, China, Eastern Europe, and elsewhere, Schäffle’s stance on the relationship between central planning and democracy is highly prescient. In no case has an adequate democracy prevailed within a centrally planned economy. In this and other vital respects, his neglected analysis has stood the test of time.

Schäffle’s economic analysis was not as sophisticated as the later efforts of von Mises and Hayek. Nevertheless, it is unduly neglected. Amazingly, Schäffle (1892, 416–19) predicted the likely survival of a regulated capitalism with democratic political institutions beyond the year 2000. In that respect his analysis is superior to von Mises’s (1949, 259) declaration that a mixed economy involving markets and state regulation is impossible, and to Hayek’s (1944, 31) contestable claim that such a mixture of “competition and central direction” would “become poor and inefficient ... neither will really work and ... the result will be worse than if either system had been consistently relied upon.”

On this, evidence endorses Schäffle rather than the Austrians. Mixed economies are everywhere. Different forms of production and allocation co-exist within capitalism. Despite their critique of any mixture of market with central direction, von Mises and Hayek did not propose that family households should be transformed into markets with the result that sexual, household and caring services should be traded between the individuals within them, or that large corporations should be broken up into one-person firms. The impressive dynamism of several capitalist systems shows that, while markets are necessary for economic innovation and vitality, modern economies have also benefitted from some economic intervention by the state.<sup>8</sup>

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<sup>8</sup> See Nelson (1981; 2003), Johnson (1982), Amsden (1989), Lazonick (1991), Kenworthy (1995), Chang and Rowthorn (1995), Chang (1997; 2002a; 2002b), Bardhan

## 2. The Contributions of von Mises and Hayek

Von Mises and Hayek developed a powerful critique of the general equilibrium theory that underlay the defence of socialism by Lange and Dickenson. Consider the problem of managerial incentives. How are managers to be encouraged to take some risks, but not to be too reckless? Dickenson (1939) proposed a system of managerial bonuses to reward competent entrepreneurs. But Hayek (1948, 199) rightly pointed out that “managers will be afraid of taking risks if, when the venture does not come off, it will be somebody else who will afterward decide whether they have been justified in embarking on it.” Bureaucrats often eschew risk-taking, minimize personal exposure to responsibility, and stick to established routine. For Hayek (1948, 194), Lange and Dickenson were “deplorably vague” about key issues, including how competent managers were to be selected.

Hayek showed that these authors had a naive view of knowledge in socio-economic systems. They assumed that all relevant technical and economic information would be readily available to the decision makers. As Dickenson (1939, 9 and 191) wrote: “All organs of the socialist economy will work, so to speak, within glass walls.” As a result, the central planning authority would be the “omnipresent, omniscient organ of the collective economy.” Similarly, writing in 1942, Lange argued that under socialism all relevant information concerning production would be widely available, with the result that “everything done in one productive establishment would and should also be done by the managers of each productive establishment” (1987, 23).

Lange and Dickenson acquired this flawed view of information and knowledge from the neoclassical theory they had embraced. Criticizing the neoclassical approach, Hayek (1948, 46 and 33) concluded that by depicting “economic man” as “a quasi-omniscient individual,” economics has hitherto neglected the problem that should be its major concern, that is “how knowledge is acquired and communicated.” The general-equilibrium models proposed by Lange and others did not deal adequately with this central problem of knowledge. Tacit knowledge held by workers and managers was ignored. The assimilation of new technical knowledge was assumed to be unproblematic.

In reality, and contrary to Lange and Dickenson, it would be impossible for managers to calculate marginal costs accurately, or for central planners to make fully *rational* investment decisions on this basis. In a complex, dynamic world we are obliged to deal with an uncertain future. Such uncertainty (in the Knightian or Keynesian senses) rules out the possibility of any reliable calculation of probabilities or expected returns. Instead, we have to rely on intuition and judgment concerning the future. As Hayek (1948, 198) argued:

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(2005), Vogel (2006), Reinert (2007), Martinez (2009), and Mazzucato (2013). This does not mean that state intervention is always beneficial (Olson 1982; Scully 1992).

In no sense can costs during any period be said to depend solely on prices during that period. They depend as much on whether these prices have been correctly foreseen as on the views that are held about future prices. Even in the very short run costs will depend on the effects which current decisions will have on future productivity ... almost every decision on how to produce ... now depends at least in part on the views held about the future.

Innovation also depends on hunches about the future. Successful innovation takes into account local, tacit and other knowledge concerning circumstances and possibilities. Much of this knowledge involves complex details and contexts, and cannot all be brought together and utilized by a central committee or planning authority.

The Austrian school emphasized market competition. Although prices were formed in Lange-type models, they neither performed a competitive function nor acted as a spur to innovation, as in a private-enterprise economy. As Hayek (1948, 196) argued:

The force which in a competitive society brings about the reduction of price to the lowest cost at which the quantity salable at that cost can be produced is the opportunity for anybody who knows a cheaper method to come in at his own risk and to attract customers by underbidding the other producers. But, if prices are fixed by the authority, this method is excluded.

Thus, for Hayek (1948, 78–9), the “economic problem of society is thus not merely a problem of how to allocate ‘given’ resources ... it is a problem of the utilization of knowledge which is not given to anyone in its totality.” Hayek (1989, 4) later expanded on this point. He considered the “relative prices and wages that will form themselves on a well-functioning market.” He argued:

Into the determination of these prices and wages there will enter the effects of particular information possessed by every one of the participants in the market process – a sum of facts which in their totality cannot be known to the scientific observer, or to any other single brain. It is indeed the source of the superiority of the market order ... that in the resulting allocation of resources more of the knowledge of particular facts will be utilized which exists only dispersed among uncounted persons, than any one person can possess.

Hayek and other Austrian school theorists saw the market as an indispensable information-processing and knowledge-transmission system. In large, complex economies the market deals with the otherwise insurmountable problems of dispersed and tacit knowledge which cannot be gathered together adequately by single individuals or organizations.

Hayek regarded government interference as generally a distortion of the free-market information-processing system. Even if we were to disagree, and acknowledge some economic and regulatory roles for the state, the market is still vital to coordinate vast amounts of complex, dispersed and tacit information.

There is no known viable alternative. Proposals for planning that overly limit or even remove the role of the market overlook this fact.

Elsewhere I have shown that the problem of tacit knowledge is misunderstood and downplayed in attempts by Fikret Adaman and Pat Devine (1994; 1996; 1997; Devine 1988) to revive models of socialist democratic planning. Adaman and Devine (1996, 531–2) argued that through “democratic participatory planning ... tacit knowledge is discovered and articulated and, on the basis of that knowledge, economic decisions are consciously planned and coordinated.” Accordingly, for Adaman and Devine, tacit knowledge was something that can eventually be “discovered and articulated,” and thereby used for conscious planning.<sup>9</sup>

On the contrary, in principle tacit knowledge is both prior to, and beyond the reach of, explicit articulation. In his classic text on the topic, Michael Polanyi (1967, 4) wrote: “*we can know more than we can tell.*” Tacit knowledge is a necessary foundation to all knowledge. Just as logically we cannot adequately define every single word in the dictionary in terms of the other words, generally we must rely on intuitions or tacit meanings.

Tacit knowledge is social knowledge, in the sense that it is acquired and developed through interaction with others. Hayek (1944, 165) wrote that the “interaction of individuals, possessing different knowledge and different views, is what constitutes the life of thought. The growth of reason is a social process based on the existence of such differences.”

Polanyi (1967, 19) showed that the foundation of all knowledge must remain inexplicit: all codifiable knowledge is necessarily an emergent property of underlying and tacit rudiments. Accordingly, “the ideal of eliminating all personal elements of knowledge would, in effect, aim at the destruction of all knowledge ... the process of formalizing all knowledge to the exclusion of any tacit knowledge is self-defeating.” Indeed, for Polanyi, to attempt to dispense with tacitness, and subject *all* human affairs to open reason and discussion, would be dangerous and destructive. It is thus a serious misunderstanding of the concept of tacit knowledge to treat it as something that eventually and generally can be articulated.

### 3. The Limitations of Democratic Planning

The unavoidable tacitness of much knowledge is one problem. Processing the huge amounts of accessible knowledge is another. In their schemes to bring all knowledge together into the hands of planners, advocates of comprehensive

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<sup>9</sup> The feasibility of their proposal for “democratic planning” has been debated more fully elsewhere (Adaman and Devine 2001 and 2002; Hodgson 1999, 2005a, 2015a).

planning overlook the time involved in gathering and dealing with available information. Also they give inadequate consideration to how innovations are to be incentivized, tested and promoted. These problems would be massively compounded if all decisions were subject to widespread democratic discussion.

Going even further than Adaman and Devine, and like classical socialists such as Owen and Marx, economists Michael Albert and Robert Hahnel (1978) wished to abolish the market in its entirety. They argued that all production should be governed by democratic worker and consumer councils, through an iterative democratic process of evaluation, plan reconciliation and adjustment (Albert and Hahnel 1978, 269–74; Albert 2003). They proposed a collectivized economy run by a maze of democratic councils and committees. They failed to appreciate the problems of tacit knowledge and the unfeasibility of the enormous number of meetings required. With such democratic planning, countless meetings would be required. With innumerable meetings, would much work get done? Oscar Wilde was right: socialism is impossible because it would take too many meetings.

Albert (2003, 9) proposed that: “workers and consumers would develop and express their desires via democratic councils with ... influence over decisions in proportion to the degree he or she will be affected by them.” But how, and by whom, would the degrees of affect be assessed? Instead of individual or collective bargaining power, Albert argued that remuneration for work should be “in tune with how hard we have worked, how long we have worked, and how great a sacrifice we have made in our work” (Albert 2003, 10). But how would the amount of effort be assessed? And who would assess it? Imagine endless quarrels over these decisions. Overwhelmed by endless parleying and conferring, the economy would at best achieve a routine and minimal performance. With such an overburdened and dysfunctional democracy, a grave danger would be that a good part of the population would begin to yearn for dictatorship. An overloaded democracy, with too many problems and decisions, could collapse or be overturned.

Novelty, by its nature, challenges established belief. Accordingly, a socio-economic system that fosters innovation must allow eccentric inventors and entrepreneurs to develop ideas that may seem implausible or far-fetched. Systems based on private property and contracts allow entrepreneurs to test the demand for new innovations by bringing them to the market. It is an imperfect system. But there is no known viable alternative in a large-scale economy.

Does the existence of planning within large corporations swing the argument back in favour of socialism? There is an important difference. While large centrally planned economies face relatively little exposure to markets, even large corporations have to deal with national or international competition from other businesses. Corporations typically respond by building devolved and flexible internal structures and by learning from other organizations. By contrast, the



complete removal of the market can remove competition and thwart incentives, thus condemning an isolated planned system to virtual stasis. The synergy of corporate planning and market competition provides modern capitalism with much of its innovative vigour.

Whatever the limitations of a market system, it has the supreme advantage that it does not require everyone to agree on everything before a decision can be made to produce or distribute a good or service. Private property and contracts permit zones of partial autonomy within an interrelated system; agents attempt to enact their decisions through negotiated contracts with others. It is thus possible for many technological or institutional innovations to be pioneered without the prior agreement of committees or bureaucrats. The former Soviet-type economies in Russia and China lacked the devolved autonomy secured by private ownership and largely failed to innovate.<sup>10</sup>

The arguments of von Mises and Hayek point decisively in favour of substantial private ownership and market competition. Von Mises underlined the importance of meaningful prices to make allocative decisions. Hayek's powerful epistemic critique highlighted the impossibility of bringing all knowledge together to make a comprehensive plan.

Schäffle's earlier arguments also remain important. In particular, he outlined the problem of incentivizing individuals in large-scale operations. He also argued that authoritarian governance would be necessary to incentivise individuals in a large-scale socialist economy, thus undermining democracy.

We have ample evidence that people can cooperate together in relatively small groups, especially when they know each other personally. Our capacities for cooperation and reciprocity in small groups are helped by our evolution over millions of years in tribal units of roughly 150 in number (Dunbar 1993 and 2011; Richerson and Boyd 1999 and 2001). Socialism of a kind might work on such a small scale, albeit lacking in the high output and technological dynamism of large-scale capitalism. If socialist societies were any larger, individual incentives for effort and innovation would be gravely diminished, and compensatory, inter-personal, trust-based mechanisms to sustain cooperation would be less effective. Consequently, externally-imposed discipline would be necessary to sustain production, and larger-scale socialism would engender authoritarianism and bureaucracy. Twentieth-century evidence supports this conclusion.

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<sup>10</sup> Murrell (1991) showed empirically that the former 'Communist' countries were apparently no less efficient in allocating resources than are capitalist societies. Where they lagged was in terms of dynamic efficiency: the ability to innovate.

#### 4. But Both Sides Neglected Law and the State

Having sided (mostly) with the Austrian school in the great debate over socialism, I now criticize some aspects of its adherents' position. They developed a powerful critique of comprehensive central planning but offered little detailed practical advice for reform or development within capitalism, other than to privatize public enterprises, encourage competition, minimize regulation, and shrink the scale and powers of the state to the practical minimum. They failed to consolidate their victory in the socialist calculation debate and develop the foundations of practical policy. By refusing a mixed economy or any other intermediate position, they shifted to an extreme, playing an ideological rather than a detailed practical role for policy-makers or politicians. In pursuing market imperatives without restraint, they failed to explain why non-market areas and incentives, such as within the family, should be retained.

Ironically, such Austrian writers share with many Marxists a failure to elaborate the details of practical economic policy for the here-and-now. Both extremes have more in common than either would care to admit.

Von Mises and Hayek argued for a system based on private property and exchange. But remarkably their depiction of these vital institutional features was inadequate. They failed to distinguish between property and possession (Heinsohn and Steiger 2013; Hodgson 2015a and 2015b). Possession simply refers to *de facto* control. By contrast, property involves legal rights established by legislative and judicial institutions. Von Mises (1981, 27) saw ownership as *de facto* "having" something, or control of the services that derive from a good, thus removing the issue of legal rights from the notion of property. Austrian writers downplay the question of rights and focus on control. Hence they omit the important function of the state as a "superior authority" (Commons 1924, 87) in enforcing legal rights.

Austrian economists have adopted extremely wide notions of market or exchange. Von Mises (1949, 97) saw all action, even by an isolated individual, as "exchange," thus removing any notion of the exchange of these rights. Accordingly, von Mises (1949, 257) adopted a near-universal definition of the market as "the social system of the division of labour under private ownership of the means of production." Consequently, his conception of the market embraced all forms of trade or exchange with assets under private control. He described any economy with a division of labour, where production was vaguely under some *private* control, as a *market* economy. These loose criteria could apply to almost all social formations in human history.

Overall, the Austrian economists' positive case for private property and markets was weakened by a serious dilution in meaning of those terms. The concepts of property, exchange and market were eviscerated (Hodgson 2015a). Their near-ubiquity robbed them of much meaning. At least until Hayek's *Constitution of Liberty* (1960), relatively little attention was given to the detailed

institutional arrangements that are necessary to sustain real property, exchange and markets.

Again the Austrians were almost a mirror image of their socialist antagonists. Neither side invested the concepts of property and exchange with sufficient institutional texture and historical specificity. Neither side adequately appreciated the role of the state and its legal system in sustaining and enforcing the rights of property and contract. Similar deficiencies are evident in later debates concerning the privatization of state-managed services. The institutional thinness of traditional positions, in debates over state versus private provision, was pinpointed by Elinor Ostrom (1990, 22):

Both the centralizers and the privatizers frequently advocate oversimplified, idealized institutions – paradoxically, almost ‘institution-free’ institutions. An assertion that central regulation is necessary tells us nothing about the way a central agency should be constituted, what authority it should have, how the limits on its authority should be maintained, how it will obtain information, or how its agents should be selected, motivated to do their work, and have their performances monitored and rewarded or sanctioned. An assertion that the imposition of private property rights is necessary tells us nothing about how that bundle of rights is to be defined, how the various attributes of the goods involved will be measured, who will pay for the costs of excluding non-owners from access, how conflicts over rights will be adjudicated, or how the residual interests of the right-holders in the resource system itself will be organized.

Von Mises and Hayek pointed to private property and markets as the unavoidable solution to economic problems. Although this allowed a more sophisticated institutional perspective than the unworkable schemes of their socialist opponents, it remained little more than an indication. As Gunnar Heinsohn and Otto Steiger (2013, 12) argued, the crucial difference between property and possession was overlooked by both sides:

The common dichotomy emphasized by economists that links freedom, law and economic prosperity with the private individual, and blames the collective for the lack or deficiency of this trinity, suffers from a simplified view of property rights as rights of ... possession. This view misses the critical importance of the rights of ownership altogether. In a similar way, economists who emphasize the ... contrast between *private* ownership and *state* ownership miss the correct dichotomy between ownership and ... possession.

Such vital matters were overlooked by both sides in the socialist calculation debates. The lack of precision when it comes to such key concepts such as property diverted the Austrian side into an untenable market absolutism that was both vague and impractical. While driving home key arguments concerning incentives and knowledge, much of the remaining structure of mainstream economic theory, with its weak concepts of property and exchange, remained intact.

Ironically, by failing to acknowledge the difference between law and custom, Austrian school thinkers have inadvertently diminished the importance of the

separation of powers within the state itself. Hayek's evolutionary portrayal of law, as an experimental search for universal principles of justice, downplayed its actual institutional features and its reliance on countervailing power. Hayek relied too often on exhortations for individual freedom and the rule of law, with inadequate attention to the power relations and institutional structures that are necessary for their preservation.<sup>11</sup>

If law were mere custom, then its efficacy against any delinquent developments in a modern state – with all its powers of propaganda and force – would be weak and fragile. To be legitimate and effective, law has to rely on countervailing power *within the state machine*, as well as from outside interest groups. It has to be legitimate even in the eyes of the state, and sufficiently independent and powerful to be enforced, even against the erring rich and mighty in politics or business. This in turn is an argument for democratic government with checks and balances – to legitimate government power and to increase the probability that powerful vested minority interests can be effectively scrutinized and checked.

In the great twentieth-century debate on capitalism versus socialism, both sides gave insufficient attention to legal rules and structures, and failed to characterize the rival systems adequately. The proponents of socialism played with general equilibrium models that were supposed to fit all worlds, and ignored key institutional features and specificities of both capitalism and socialism. The Austrian school inadequately specified the nature of private property and exchange, rendering them as near-universal phenomena. Their notions of property and exchange were inadequate. Hence they omitted key historically specific features of a market economy.

## 5. Crucial Institutions Spanning the Individual and the State

For different reasons, both sides in the socialist calculation debates neglected the importance of countervailing institutions and its system of law for capitalism. Generally the Austrian school stressed market competition, believing that individual and market forces are the remedy. Austrian school writers have been generally hostile to trade unions, and have complained that their power has led to market distortions and unemployment. Concerning corporations, von Mises (1949, 307) regarded the separation of ownership and control as inefficient, anti-competitive, and the result of hostile intrusion by government:

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<sup>11</sup> In a powerful critique, Burczak (2006, 59–66) countered Hayek's view of law as a potentially neutral process by which apolitical rules of justice are established. Legal realists emphasize that law unavoidably depends on interpretations of facts, by judges, witnesses, and other participants, that are selected and colored by preconceptions and prejudices. Legal judgments can thus be swayed by political and ideological circumstances.

A successful corporation is ultimately never controlled by hired managers. The emergence of an omnipotent managerial class is not a phenomenon of the unhampered market economy. It was, on the contrary, an outgrowth of the interventionist policies consciously aiming at an elimination of the influence of the shareholders and at their virtual expropriation.

But requiring all shareholders to be managers would greatly limit the possibilities of financing large-scale production. Hayek (1948, 116) similarly blamed much corporate corpulence on the state. With their small-scale, individualistic view of entrepreneurship and economic activity, Austrian school economists have never adequately come to grips with the modern corporation and the dynamic role it has often played in the development of capitalism and modern technology. Corporations within capitalism have helped enable massive investment and economies of scale.

The socialist side of the debate assumed neoclassical models of *perfect* market competition that assumed away any oligopolistic or monopoly power. Both in their theoretical models and in their ideology, socialists have often promoted an ideal, homogenized economic system.

At least in their economic theories, neither side acknowledged the possibility that counter-balancing agglomerations of economic or political power could have positive as well as negative outcomes in terms of economic dynamism and socio-political progress. The emergence and enduring dynamism of capitalism depended on effective countervailing power, and layers of organization between the individual and the state (North et al. 2009).

As a negative historical illustration, consider an attempt to eliminate all large organizations in civil society between the individual and the state. In pre-revolutionary France under Louis XIV there were numerous corporations, closely tied up with royal power and bureaucracy, that spanned the worlds of business and politics (Lamoreaux and Rosenthal 2005; Guinnane et al. 2007). The sale of corporate offices provided an important source of royal revenues. In return, numerous corporations and guilds received privileges from the king. This era of *Colbertism* involved bureaucratic meddling, regulation, nepotism, and corruption.

In search of an individualistic utopia, and against the despised institutions of the *Ancien Régime*, the French revolutionary authorities enacted laws from 1791 that prohibited organizations of workers, professionals and entrepreneurs, and ended much state regulation of business. Business coalitions, guilds and even business corporations were abolished (North et al. 2009, 206–7). Individuals were free to pursue their business interests but forbidden to join together for business purposes. Generally, apart from local chambers of commerce composed of individual traders, organized intermediate forms between the individual and the state were banned.

But there were no regulations or institutions to ensure product quality or guarantee professional competence. The legislators proposed that the market

would take care of these problems. But, after the prohibition of professional and business associations, the only option for airing commercial grievances, instituting standards, or establishing codes of conduct, was for individuals to lobby the state. In the absence of other channels, the state became by default the only grievance forum and sole regulatory authority, against the spirit of the *laissez-faire* doctrine of the time. In the absence of substantial intermediate organizations, the very legislation designed to minimize state meddling in business created paradoxically a monopoly of state regulation and interference. Consequently this revolutionary experiment in market individualism was short-lived (Kuisel 1981; Hirsch 1989 and 1991; Hirsch and Minard 1998).

Corporations were later reinstated under Napoléon and enshrined in his legal code. But the statist response to the *laissez-faire* atomization of business left enduring marks on French economic institutions. *Laissez-faire* individualism removed intermediate institutions between individuals and the state, which in turn fed the state bureaucracy that *laissez-faire* was designed to disempower. France's record of *dirigisme* and bureaucracy has some roots in its free-market market individualism of the 1790s.

This illuminates the potentially positive role of organized, countervailing and intermediate institutions between the individual and the state. The corporation itself is such an intermediate institution. Although its creation depends on recognition and registration by the state, it has considerable autonomy regarding its internal organization and rules. This autonomy helps account for large-scale investment and the dynamic adaptability of capitalism. But the very existence of the corporation means that competition is not just between individuals: it is between multiple legal entities with vastly different powers and resources. The corporate form permits large concentrations of resources with enduring nodes of ownership that can outlast the life of an individual.

The role of business networks in modern capitalism has been studied extensively, from the *Chaebols* in Korea, and the *Keiretsu* in Japan, to business associations in Europe and North America. These networks have inspired a range of empirical studies and elaborate theoretical speculations. Most scholars agree that they often have knowledge-sharing, knowledge development and political-lobbying functions. These studies illustrate the powerful role organizations and coalitions play as mediators between the individual and state in modern capitalism.<sup>12</sup>

So important are these constellations of economic power that attempts at deregulation are often thwarted. In an empirical study of attempted deregulation in the United Kingdom, the United States, France, Germany and Japan, Steven

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<sup>12</sup> See Granovetter (1982), Baker (1990), Powell (1990), Grabher (1993), Hage and Alter (1997), Cohendet et al. (1999), Rauch and Casella (2001), White (2002), Thompson (2003), and Nooteboom (2004).

K. Vogel (1996) showed that regulations have often increased rather than diminished. In attempting to establish freer competition, new rules are necessary to encourage new entrants and promote competition. Proponents of liberalization sometimes make the mistake of the French revolutionaries of the 1790s and some Eastern Bloc reformers of the 1990s: they assume that the retreat of the state will automatically lead to competitive markets. They overlook the likely and sometimes useful concentrations of power in civil society and the inevitability of rules, including rules framed by governments. The global movement for 'deregulation' in fact led to re-regulation in various forms.

These examples of intermediate organization suggest that as long as we are trapped in the Tweedledum-and-Tweedledee debate between planning and markets, we shall be unable to appreciate the intermediating networks and institutions that have played a vital role in the development of modern capitalism. Experience reveals the limitations of both wholesale socialism and atomized individualism. Along with individual property rights, all successful capitalisms have embraced corporate organization and other intermediate layers of organized power, as well as varying measures of state intervention. These are important for both its emergence and its vitality.

But while intermediate organization is necessary, it is insufficient. It guarantees neither dynamism, democracy, nor legality. Excessive corporate or military power can undermine or constrain democracy (Galbraith 1952 and 1969; Lindblom 1977; Dahl 1982; Crouch 2004 and 2011). Countervailing power has to balance rather than overwhelm other legitimate authority. The maintenance of politico-economic systems with their counterbalanced powers requires constant vigilance.

## **6. Information, Knowledge and Limits to Markets**

The Austrian school economists emphasized that knowledge is localized, is often tacit and dispersed, and cannot readily be communicated to a large collective body. They had a much more sophisticated appreciation of the nature of knowledge than did their neoclassical opponents. But the Austrians failed to note that similar knowledge problems also apply to large corporations. Corporations face the ongoing problem of accessing and sharing knowledge within their organizations (Nonaka and Takeuchi 1995).

Furthermore, not all assets are physical. Rights to access, use, and sell information can also be owned. Addressing intellectual property such as patents and trademarks, Hayek (1948, 114–15) pointed to limitations of the contractual framework in this area. But as capitalism becomes more and more knowledge-intensive, the limits to contract when dealing with information and knowledge become more serious, for reasons that I shall now summarize.

Unlike other commodities, the contractual transfer of information has some curious features that challenge the standard contractarian framework (Nelson 1959; Arrow 1962). First, once acquired, codifiable information can often be easily reproduced in multiple copies by its buyer, and possibly sold to others. This places the seller at a disadvantage. Accordingly, there may be licenses, patents or other restrictions to prevent the buyer from selling it on to others.

Second, codifiable information has the peculiar property that, once it is sold, it also remains in the hands of the seller. Information is not a *normal* commodity that changes hands from seller to buyer when it is purchased. US President Thomas Jefferson allegedly likened knowledge to the light of a candle: its flame may be used to light another, but its own light is not weakened. Information is a *club good*: its use is non-rivalrous but it is potentially excludable (through copyright laws, etc.).

Third, Arrow (1962, 616) wrote: “there is a fundamental paradox in the determination of demand for information: its value for the purchaser is not known until he has the information, but then he has in effect acquired it without cost.” If we knew what we were going to buy then we would no longer need to buy it.

Consequently, in an economy involving substantial flows of information, it is sometimes problematic or counter-productive to follow Hayek’s (1948, 18) advice and establish clear “rules which, above all, enable man to distinguish between mine and thine.” Information challenges the bounds of exclusive and individual property. What is possessed cannot always be clearly defined, because to define it fully is to give it away. It is often unclear as to who owns what information. It is not always possible or efficient to break up information into discrete pieces and give each one an ownership tag. It is often difficult to determine who discovered the information in the first place, or who can claim legal title to its ownership. An information-rich society challenges the meaning and boundary of what is mine and what is thine.

Hayek rightly emphasized the importance and unavoidable inaccessibility of much tacit knowledge, something that his socialist opponents had ignored. But he wrote as if an appreciation of tacit and inaccessible knowledge clinched the matter in favour of a system based on private property and markets. He overlooked the differences between information and physical commodities, as itemized by Nelson and Arrow.

As Arrow (1996, 651) pointed out, firms share much technical and managerial knowledge. He continued: “Information is the basis of production, production is carried on in discrete legal entities, and yet *information is a fugitive resource*, with limited property rights.” He envisaged an “increasing tension” between legal relations based on private ownership and the information-intensive economy.

Information is a non-rival good that often can be easily shared (its use by one person does not diminish its usability by another). But private ownership



of intellectual assets involves exclusive concentrations of rights and a massive general denial of readily available user rights to others. But such exclusive property rights are necessary for informational assets to be used as collateral. If followed fully, the logic of a knowledge-intensive capitalist economy requires knowledge to be privatized. The resulting denial of the cheaply-acquired benefits of the shared possession of non-rivalrous informational assets can generate remarkable inefficiencies. Furthermore, the infinite extension and subdivision of ownership in a densely interconnected knowledge economy can create an *anti-commons* where extensively divided and interconnected rights – in a real world with positive transaction costs – obstruct investment and trade. This problem applies particularly to patents and other intellectual property and has become more severe in an increasingly knowledge-intensive economy (Heller 2008; Pagano 2014). The ubiquitous imposition of legal rules “to distinguish between mine and thine” (Hayek 1948, 18) can deprive many people of information that is vital for their work or wellbeing. Capitalism is challenged by increasing knowledge intensity: it must limit its own use of private property and the market mechanism to survive.

The huge productivity growth associated with modern capitalism has been partly empowered by science and technology. Yet the development of science has traditionally depended on commitments to the pursuit and distribution of truth as well as to profit (Hagstrom 1965). Some scholars have argued that the wholesale commercialization of science could threaten its viability (Mirowski and Sent 2002; Buenstorf 2009).

To his credit Hayek (1944, 38; 1979, 44) accepted that government should provide “channels of information,” plus “standards of measure, and ... many kinds of information ranging from land registers, maps, and statistics to the certification of the quality of some goods or services.” As capitalism has become more complex, these informational needs have become much greater, implying a greater need for public provision. While much information and knowledge cannot be shared (because of tacitness, interpretative difficulty, or inaccessibility) much else can, and this can be of huge productive value. Consequently, the benefits of private and contractual provision of this information may be much less than the overall opportunity costs of charging a price for its use. A healthy market system itself depends on the incompleteness of markets for information; some crucial data must be unowned and available freely.

Consider the phenomenal growth of the internet. In the early 1990s, CERN (the European Organization for Nuclear Research) developed key elements of the internet infrastructure. They were released to the public for free to ensure that the information technology would become widespread. Similarly, many software programs and even operating systems are available free of charge. The internet has vastly stimulated markets, but not all its components or enablers were marketed. Modern capitalism has reduced the marginal cost of

many additional informational goods and services to near zero, making profitability less viable as their main spur of production (Rifkin 2014).

To their credit, the Austrian school economists promoted a non-mechanistic view of the economy where information and knowledge are paramount. But they paid insufficient attention to different types of information or knowledge, their different degrees of accessibility, their different strategic roles, and to the limitations of information contracting. These points lead us away from a pure-market utopia, towards an economy that combines markets with state and non-state organizations.

The Austrians and others have rightly pointed to the limits of state intervention and the inherent difficulties of government involvement in a modern complex economy. But that does not mean that the state should have no economic role. As some Austrian writers concede, the constitutive roles of law and the state imply that some state involvement is unavoidable. While state intervention in the economy is often confounded by problems of complexity and distributed knowledge, the state can sometimes intervene effectively as a coordinator, enabler, information processor, and strategic leader (Nelson 1981a and 2003; Chang 1997 and 2002b; Mazzucato 2013).

## **7. Concluding Remarks: Hayek Versus von Mises**

Nevertheless, Hayek adopted a number of key policies that are prominent among modern social democrats. For this reason, some libertarians became critical of him and transferred their foremost allegiance to von Mises (Hoppe 1994; Block 1996). Consider their contrasting conceptions of exchange, property and markets. Although Hayek insufficiently acknowledged the essential role of the state in sustaining the legal system, he did at least pay much attention to legal aspects of a market economy. By contrast, von Mises argued that legal concepts could be largely sidelined from economics and sociology. His rationalism and utilitarianism involved ahistorical and individualist concepts, deemed “independent of social relations between men” (Mises 1981, 27).

Von Mises (1949, 97) saw all human action as exchange. Von Mises (1981, 27) considered property as “purely a physical relationship of man to the goods, independent of social relations between men or of a legal order.” This would extend the meaningful life of these broadly-defined concepts, from the few centuries of capitalism’s existence, to long before the few thousand years of extensive trade and market activity, and through millions of years of our ape-like evolution. Consequently, while undermining comprehensive central planning and all schemes to abolish markets in their entirety, von Mises’s defence of property, exchange and markets does not promote a clearly-defined socio-economic system. It is not even specific to human society. His defence of private

property is no more than an argument for private possession. His discourse was too blunt to defend real historical exchange or markets. Consequently, as a defence of capitalism in institutional detail, especially as it has emerged from the eighteenth century, it is weak and ineffective.

Hayek was more of an institutionalist than was von Mises. He provided his core concepts with greater legal and historical specificity, even if his moves in that direction were inadequate. Furthermore, by giving more detailed attention to matters of practical policy, he realized that government had to retain a significant role in the economic sphere. By contrast, von Mises and his followers showed unwittingly that an ahistorical universality of concepts, combined with an ideological purism, can lead to practical ineffectiveness. It means so little to defend an exchange economy, when exchange is defined as no more than action. It is a weak case for private property, when it is defined simply as that which we can access or use, irrespective of any legal rights to do so. Von Mises's attempts to render these concepts universal denuded them of much meaning, and thereby eviscerated his policy recommendations.

Neither Hayek nor von Mises adequately came to grips with some of the great institutional structures that help define modern capitalism. They played down the place of debt in the constitution of money, and largely overlooked its saleability as a driver of capitalist advance. They gave no emphasis to the role of property as collateral for securing money for investment. They greeted the corporation with caution, regretting the establishment of limited liability while yearning for a lost world of individual entrepreneurs. The defects of the corporation were largely blamed on the state. The market economy that they defended had more to do with an economy of self-employed producers and small-scale production than with the real capitalist world of large oligopolistic corporations.

The great debate between capitalism and socialism has been plagued by purists on both sides. Capitalism has been let down by its supporters, who have failed to identify adequately its key features. But it has also been fortunate in its enemies, who have generally failed to articulate a feasible alternative. With a deeper analysis of its fundamental institutions, and with an acknowledgement of the vital role of the state in a capitalist economy, we now have a chance of reaching a richer understanding of the system, its potential, and its limitations.

## References

- Adaman, Fikret and Patrick Devine. 1994. "Socialist Renewal: Lessons from the 'Calculation Debate.'" *Studies in Political Economy* 43 (Spring): 63–77.
- 1996. "The Economic Calculation Debate: Lessons for Socialists." *Cambridge Journal of Economics* 20 (5): 523–37.
- 1997 "On the Economic Theory of Socialism." *New Left Review* 221: 54–80.

- 2001. “Participatory Planning as a Deliberative Democratic Process: A Response to Hodgson’s Critique.” *Economy and Society* 30 (2): 229–39.
- 2002. “A Reconsideration of the Theory of Entrepreneurship: a Participatory Approach.” *Review of Political Economy* 14 (3): 329–55.
- Albert, Michael. 2003. *Parecon: Life after Capitalism*. London and New York: Verso.
- Albert, Michael and Robert Hahnel. 1978. *Unorthodox Marxism: An Essay on Capitalism, Socialism and Revolution*. Boston: South End Press.
- Amsden, Alice H. 1989. *Asia’s Next Giant: South Korea and Late Industrialization*. Oxford and New York: Oxford University Press.
- Arrow, Kenneth J. 1962. “Economic Welfare and the Allocation of Resources to Invention.” In *The Rate and Direction of Inventive Activity: Economic and Social Factors*, edited by Richard R. Nelson, 609–25. Princeton: Princeton University Press.
- 1996. “Technical Information and Industrial Structure.” *Industrial and Corporate Change* 5 (2): 645–52.
- Baker, Wayne E. 1990. “Market Networks and Corporate Behavior.” *American Journal of Sociology* 93 (3): 589–625.
- Bardhan, Pranab K. 2005. “Institutions Matter, But Which Ones?” *Economics of Transition* 13 (3): 499–532.
- Block, Walter. 1996. “Hayek’s Road to Serfdom.” *Journal of Libertarian Studies* 12 (2): 339–65.
- Boettke, Peter J. 2000. *Socialism and the Market: The Calculation Debate Revisited*. London and New York: Routledge.
- Boettke, Peter J. 2001. *Calculation and Coordination: Essays on Socialism and Transitional Political Economy*. London and New York: Routledge.
- Buenstorf, Guido. 2009. “Is Commercialization Good or Bad for Science? Individual-Level Evidence from the Max Planck Society.” *Research Policy* 38: 281–292.
- Burczak, Theodore. 2006. *Socialism after Hayek*. Ann Arbor, MI: University of Michigan Press.
- Chang, Ha-Joon. 1997. “The Economics and Politics of Regulation: A Critical Survey.” *Cambridge Journal of Economics* 21 (6): 703–28.
- 2002a. *Kicking Away the Ladder: Development Strategy in Historical Perspective*. London: Anthem Press.
- 2002b. “Breaking the Mould: An Institutionalist Political Economy Alternative to the Neo-Liberal Theory of the Market and the State.” *Cambridge Journal of Economics* 26 (5): 539–59.
- Chang, Ha-Joon and Robert E. Rowthorn, eds. 1995. *The Role of the State in Economic Change*. Oxford: Clarendon Press.
- Coase, Ronald H. and Ning Wang. 2012. *How China Became Capitalist*. London and New York: Palgrave Macmillan.
- Commons, John R. 1924. *Legal Foundations of Capitalism*. New York: Macmillan.

- Crouch, Colin. 2004. *Post-Democracy*. Cambridge UK and Malden MA: Polity Press.
- 2011. *The Strange Non-Death of Neoliberalism*. Cambridge UK and Malden MA: Polity Press.
- Dahl, Robert A. 1982. *Dilemmas of Pluralist Democracy*. New Haven, CT: Yale University Press.
- Devine, Patrick. 1988. *Democracy and Economic Planning: The Political Economy of a Self-Governing Society*. Cambridge: Polity Press.
- Dickenson, Henry D. 1933. “Price Formation in a Socialist Community.” *Economic Journal* 43: 237–50.
- 1939. *Economics of Socialism*. Oxford: Oxford University Press.
- Dunbar, Robin I. M. 1993. “Coevolution of Neocortical Size, Group size, and Language.” *Behavioral and Brain Sciences* 16: 681–94.
- 2011. “Constraints on the Evolution of Social Institutions and their Implications for Information flow.” *Journal of Institutional Economics* 7 (3): 345–71.
- Galbraith, John Kenneth. 1952. *American Capitalism: The Concept of Countervailing Power*. Boston: Houghton Mifflin.
- 1969. *The New Industrial State*. Harmondsworth: Penguin.
- Grabher, Gernot, ed. 1993. *The Embedded Firm: On the Socioeconomics of Industrial Networks*. London: Routledge.
- Granovetter, Mark. 1982. “The Strength of Weak Ties: A Network Theory Revisited.” In *Social Structure and Network Analysis*, edited by P. Marsden and N. Lin, 105–31. Beverly Hills, CA: Sage.
- Guinnane, Timothy, Ron Harris, Naomi Lamoreaux and Jean-Laurent Rosenthal. 2007. “Putting the Corporation in its Place.” *Enterprise and Society* 8 (3): 687–779.
- Hage, Jerald and Catherine Alter. 1997. “A Typology of Interorganizational Relationships and Networks.” In *Contemporary Capitalism: The Embeddedness of Institutions*, edited by J. Rogers Hollingsworth and Robert Boyer, 94–125. Cambridge and New York: Cambridge University Press.
- Hagstrom, Warren O. 1965. *The Scientific Community*. New York: Basic Books.
- Hayek, Friedrich A., ed. 1935. *Collectivist Economic Planning*. London: George Routledge. Reprint, 1975.
- 1944. *The Road to Serfdom*. London: George Routledge.
- 1948. *Individualism and Economic Order*. London and Chicago: George Routledge and University of Chicago Press.
- 1960. *The Constitution of Liberty*. London and Chicago: Routledge and Kegan Paul, and University of Chicago Press.
- 1988. “The Fatal Conceit: The Errors of Socialism.” In: *The Collected Works of Friedrich August Hayek*, edited by William W. Bartley III. Vol. I. London: Routledge.
- 1989. “The Pretence of Knowledge.” *American Economic Review* 79 (6): 1–7.

- Heinsohn, Gunnar and Otto Steiger. 2013. *Ownership Economics: On the Foundations of Interest, Money, Markets, Business Cycles and Economic Development*. Translated and edited by Frank Decker. London and New York: Routledge.
- Heller, Michael A. 2008. *The Gridlock Economy: How Too Much Ownership Wrecks Markets, Stops Innovation, and Costs Lives*. New York: Basic Books.
- Hirsch, Jean-Pierre. 1989. "Revolutionary France, Cradle of Free Enterprise." *American Historical Review* 94 (5): 1281–89.
- 1991. *Les deux rêves du Commerce. Entreprise et institution dans la région lilloise, 1780–1860*. Paris: EHESS.
- Hirsch, Jean-Pierre and Philippe Minard, Philippe. 1998. "Libérez-nous, Sire, protégez-nous beaucoup: pour une histoire des pratiques institutionnelle dans l'industrie française, XVIIIe–XIXe siècles." In *La France n'est elle-pas douée pour l'industrie?*, edited by Louis Bergeron and Patrice Bourdelais, 135–158. Paris: Belin.
- Hodgson, Geoffrey M. 1999. *Economics and Utopia: Why the Learning Economy is not the End of History*. London and New York: Routledge.
- 2005a. "The Limits to Participatory Planning: A Reply to Adaman and Devine." *Economy and Society* 31 (1): 141–53.
- 2005b. "Knowledge at Work: Some Neoliberal Anachronisms." *Review of Social Economy* 63 (4): 547–65.
- 2010. "Albert Schäffle's Critique of Socialism." In *Economic Theory and Economic Thought: Essays in Honour of Ian Steedman*, edited by John Vint et al., 296–315. London and New York: Routledge.
- 2015a. *Conceptualizing Capitalism: Institutions, Evolution, Future*. Chicago: University of Chicago Press.
- 2015b. "Much of the 'Economics of Property Rights' Devalues Property and Legal Rights." *Journal of Institutional Economics* 11 (4): 683–709.
- Hoppe, Hans-Hermann. 1994. "F. A. Hayek on Government and Social Evolution: A Critique." *Review of Austrian Economics* 7 (1): 67–93.
- Johnson, Chalmers. 1982. *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925–1975*. Stanford: Stanford University Press.
- Kenworthy, Lane. 1995. *In Search of National Economic Success: Balancing Competition and Cooperation*. Thousand Oaks, CA and London: Sage.
- Kuisel, Richard F. 1981. *Capitalism and the State in Modern France*. Cambridge: Cambridge University Press.
- Lamoreaux, Naomi R. and Jean-Laurent Rosenthal. 2005. "Legal Regime and Contractual Flexibility: A Comparison of Business's Organizational Choices in France and the United States during the Period of Industrialization." *American Law and Economics Review* 7 (1): 28–61.
- Lange, Oskar R. 1936–37. "On the Economic Theory of Socialism: Parts One and Two." *Review of Economic Studies* 4 (1): 53–71; 4 (2): 123–42. Reprint, 1938.

- 1967. “The Computer and the Market.” In *Capitalism, Socialism and Economic Growth: Essays Presented to Maurice Dobb*, edited by C. Feinstein, 158–61. Cambridge: Cambridge University Press.
- 1987. “The Economic Operation of a Socialist Society.” *Contributions to Political Economy* 6: 3–24.
- Lange, Oskar R. and Frederick M. Taylor. 1938. *On the Economic Theory of Socialism*, edited by Benjamin E. Lippincot. Minneapolis: University of Minnesota Press.
- Lavoie, Donald. 1985a. *Rivalry and Central Planning: The Socialist Calculation Debate Reconsidered*. Cambridge: Cambridge University Press.
- 1985b. *National Economic Planning: What is Left?* Cambridge, MA: Ballinger.
- Lazonick, William. 1991. *Business Organization and the Myth of the Market Economy*. Cambridge: Cambridge University Press.
- Lindblom, Charles E. 1977. *Politics and Markets: The World’s Political-Economic Systems*. New York: Basic Books.
- Martinez, Mark A. 2009. *The Myth of the Free Market: The Role of the State in a Capitalist Economy*. Sterling, VA: Kumarian Press.
- Mazzucato, Mariana. 2013. *The Entrepreneurial State: Debunking Public vs. Private Sector Myths*. London and New York: Anthem.
- Mirowski, Philip and Esther-Mirjam Sent, eds. 2002. *Science Bought and Sold: Essays on the Economics of Science*. Chicago: Chicago University Press.
- Murrell, Peter. 1983. “Did the Theory of Market Socialism Answer the Challenge of Ludwig von Mises? A Reinterpretation of the Socialist Controversy?” *History of Political Economy* 15 (1): 92–105.
- 1991. “Can Neoclassical Economics Underpin the Reform of Centrally Planned Economies?” *Journal of Economic Perspectives* 5 (4): 59–76.
- Nelson, Richard R. 1959. “The Simple Economics of Basic Scientific Research.” *Journal of Political Economy* 67 (3): 297–306.
- 1981. “Assessing Private Enterprise: An Exegesis of Tangled Doctrine.” *Bell Journal of Economics* 12 (1): 93–111.
- 2003. “On the Complexities and Limits of Market Organization.” *Review of International Political Economy* 10 (4): 697–710.
- Nonaka, Ikujiro and Hiroaka Takeuchi. 1995. *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford and New York: Oxford University Press.
- Nooteboom, Bart. 2004. *Inter-Firm Collaboration, Learning and Networks: An Integrated Approach*. London and New York: Routledge.
- North, Douglass C., John J. Wallis and Barry R. Weingast. 2009. *Violence and Social Orders: A Conceptual Framework for Interpreting Recorded Human History*. Cambridge: Cambridge University Press.
- Oi, Jean C. 1999. *Rural China Takes Off: Institutional Foundations of Economic Reform*. Berkeley: University of California Press.

- Olson Jr., Mancur. 1982. *The Rise and Decline of Nations: Economic Growth, Stagflation and Social Rigidities*. New Haven: Yale University Press.
- Ostrom, Elinor. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.
- Pagano, Ugo. 2014. "The Crisis of Intellectual Monopoly Capitalism." *Cambridge Journal of Economics* 38 (6): 1409–29.
- Polanyi, Michael. 1967. *The Tacit Dimension*. London: Routledge and Kegan Paul.
- Powell, Walter W. 1990. "Neither Market nor Hierarchy: Network Forms of Organization." *Research in Organizational Behavior* 12: 295–336.
- Rauch, James E. and Alessandra Casella, eds. 2001. *Networks and Markets*. New York: Russell Sage Foundation.
- Reinert, Erik S. 2007. *How Rich Countries Got Rich ... And Why Poor Countries Stay Poor*. London: Constable.
- Richerson, Peter J. and Robert Boyd. 1999. "Complex Societies: The Evolutionary Origins of a Crude Superorganism." *Human Nature* 10: 253–89.
- 2001. "Institutional Evolution in the Holocene: The Rise of Complex Societies." In *The Origin of Human Social Institutions*, edited by Walter G. Runciman, 197–234. Oxford and New York: Oxford University Press.
- Rifkin, Jeremy. 2014. *The Zero Marginal Cost Society: The Internet of Things, the Collaborative Commons, and the Eclipse of Capitalism*. New York and London: Palgrave Macmillan.
- Schäffle, Albert E. F. 1870. *Kapitalismus und Sozialismus: mit besonderer Rücksicht auf Geschäfts und Vermögensformen*. Tübingen: Laupp.
- 1874. *Quintessenz des Sozialismus*. Gotha: Perthes.
- 1885. *Die Aussichtslosigkeit der Socialdemokratie. Drei Briefe an einen Staatsmann zur Ergänzung der 'Quintessenz des Sozialismus.'* Tübingen: Laupp.
- 1892. *The Impossibility of Social Democracy: Being a Supplement to 'The Quintessence of Socialism.'* Translated by A. C. Morant. London: Swan Sonnenschein and New York: Charles Scribner's Sons.
- 1908. *The Quintessence of Socialism*. Translated by Bernard Bosanquet. London: Swan Sonnenschein and New York: Charles Scribner's Sons.
- Scully, Gerald B. 1992. *Constitutional Environments and Economic Growth*. Princeton: Princeton University Press.
- Steele, David Ramsay. 1992. *From Marx to Mises: Post-Capitalist Society and the Challenge of Economic Calculation*. La Salle, Illinois: Open Court.
- Thompson, Grahame F. 2003. *Between Hierarchies and Markets: The Logic and Limits of Network Forms of Organization*. Oxford and New York: Oxford University Press.
- Vaughn, Karen I. 1980. "Economic Calculation Under Socialism: The Austrian Contribution." *Economic Inquiry* 18: 535–54.



- Vogel, Steven K. 1996. *Freer Markets, More Rules: Regulatory Reform in Advanced Industrial Countries*. Ithaca, NY: Cornell University Press.
- 2006. *Japan Remodelled: How Government and Industry are Reforming Japanese Capitalism*. Ithaca, NY: Cornell University Press.
- von Mises, Ludwig. 1920. “Die Wirtschaftsrechnung im sozialistischen Gemeinwesen.” *Archiv für Sozialwissenschaften und Sozialpolitik* 47 (1): 86–121.
- 1935. “Economic Calculation in the Socialist Commonwealth.” Translated by S. Adler. In *Collectivist Economic Planning*, edited by Friedrich A. Hayek, 87–130. London: George Routledge.
- 1949. *Human Action: A Treatise on Economics*. London and New Haven: William Hodge and Yale University Press.
- 1981. *Socialism: An Economic and Sociological Analysis*. Translated by J. Kahane. Indianapolis: Liberty Classics.
- Webb, Sidney J. and Beatrice Webb. 1920. *A Constitution for the Socialist Commonwealth of Great Britain*. London: Longmans Green.
- White, Harrison C. 2002. *Markets from Networks: Socioeconomic Models of Production*. Princeton: Princeton University Press.
- Zhou, Kate Xiao. 1996. *How the Farmers Changed China*. Boulder, CO: Westview Press.