Paul Duguid

Introduction:

The Changing Organization of Industry

In his seminal 1972 essay on the “organization of industry,” G. B. Richardson argued that economists had generally viewed firms as “islands of planned co-ordination in a sea of market relations.” Business historians, too, had focused predominantly on the firm (or entrepreneur) and the market. In drawing attention when he did to the “dense networks of co-operation and affiliation by which firms are inter-related,” Richardson was on the forefront of what would become a noticeable shift in the analysis of business organization.¹ There were many reasons for this transition. In particular, the comparative success of the “Japanese model,” with its “intermarket” keiretsu disturbed standard assumptions. (Richardson himself pointed to Japanese firms as thriving examples of “the dense network of co-operation and affiliation by which firms are inter-related.”)² Furthermore, it was becoming clear that in many emerging industries the networked relations of industrial clusters were increasingly important.³ Comparative research suggested that new-technology firms with tightly drawn boundaries were at a competitive disadvantage to firms that had developed cooperative links not only to suppliers but even to competitors.⁴ To explain such developments, economists, organizational theorists, and business historians alike looked beyond not only the conventional boundaries of the firm but also the conventional boundaries of their disciplines. In particular, they turned to theories of networks, the topic of this special issue.

The enthusiastic discussions of networks that have taken place over the past three decades, however, have paradoxically often made the concept of networked organizations hard to handle, especially for business historians. Such discussions are frequently inexact, whiggish, and technologically driven. Regarding the first, Raymond Williams noted how the “warmly persuasive” word community was employed more for its polemical appeal than its precision.⁵ Much the same can be said of network, which was
too often left undefined, as if all knew what it was and all approved. As for the second characteristic, the whiggish aspirations embedded in contemporary uses are nicely anticipated in the first citation for the notion of “trade networks” in the *Oxford English Dictionary*:

> From the jungle and swamp to the city the painful ascent should be made
> From the first rough knottings of barter to infinite network of trade.

H. D. Traill’s satirical poem captures Victorian confidence that the age had shaken off the barbaric past and, in its networks, reached the summit of civilization. A century later, the term *network* has been taken up again with similar confidence. Modern claims for a network “society,” “age,” or “economy” sometimes imply that the present has escaped the past so completely that, except for examples of idiocy or innocence, history can reveal little.

Another modern twist on a Victorian trope further elucidates the difficulties that business historians might have with the concept of network. Throughout Victorian literature, new technologies were used as metaphors for social transformation. The principal vehicle for this idea was, of course, the train, whose tracks run throughout nineteenth-century books, essays, and treatises. Modern discussions of networks not only echo this trope; they often go beyond simple metaphor to suggest that we have entered the network age courtesy of technology. In the 1990s, it was widely assumed that the Internet (the term is, of course, an abbreviation of *inter-network*) had unleashed a “new” and “networked” economy, whose “new rules” escape the imperfections of the old and offer unprecedented bounties of “network effects.” Technological determinism of this sort and history rarely sit well together. The networked enterprise can too easily appear as an ill-defined, yet supersessive, form of business organization, driven by technology and lacking a past—hardly ideal fodder for the business historian.

Yet, as Richardson’s argument suggests, networks have probably always been with us, and, if so, they do merit historical study, which is what this issue of the *Review* undertakes. Three of the papers were presented at the 2004 Business History Conference in Le Creusot, whose topic was networks. All focus on wine, a commodity whose characteristics, the articles suggest, shed light on the reasons networks form. None of the authors sought to produce a new theory of networks, but individually and collectively
they respond implicitly—as did many participants at that conference—to recent calls for
less jejune network analysis. For example, in the introduction to an important collection
of essays on networks in organizational theory, Gernot Grabher and Walter Powell have
argued that only “detailed longitudinal studies of networks can mitigate the lack of
attention to context” in much network analysis. The first three papers cover two hundred
years: David Hancock’s essay spans most of the eighteenth century, mine picks up the
story in the first half of the nineteenth, and James Simpson is concerned with events in
the second half of that century. Moreover, in a fourth paper, not given at the conference
but added here, Teresa da Silva Lopes surveys the twentieth century, extending the
account into the twenty-first. Again, in a recent, inclusive survey of the topic of networks,
Joel Podolny and Karen Page note the lack of sustained critique in much network theory
and call for “more attention to constraints and dysfunctionality.”14 Here, Hancock shows
why people might abandon networks, I demonstrate how they abandon them, and
Simpson and Silva Lopes reveal the other organizational forms that people turn to when
networks fail.15

In answer to reports of the utter newness of networks, then, business historians
can point without much difficulty to past networks that in many salient ways resemble the
ones that exist today.16 Yet, in deploying network concepts, business historians must not
only look back in time but also refer to other fields. In so doing, they confront critical
differences between what can broadly be called economic views of networks and
sociological ones, for many network concepts developed within the disciplines of
sociology and anthropology.17

Underlying tensions between the two views have historical roots that are
evident within the works of Adam Smith. The Wealth of Nations shows Smith to be
deeply suspicious of network-like relations of cooperation. He growls against “tacit, but
constant combinations” that, in his view, can only lead to engrossing, forestalling, and
conspiring. The key figure in Smith’s market society is the unattached merchant. Smith
feared merchants’ inability to stay unattached for long, noting the hard-to-resist proclivity
to combine.18 The Theory of Moral Sentiments, however, suggests that this unattached
merchant is, in fact, the product of complex social institutions, such as “commercial
countries” and “the authority of law.” These institutions, which would seem to require a
fair amount of constant combination, are needed to free individuals, who would otherwise
remain encumbered by social ties, and to keep them free. From this perspective, it is less the case that the individual makes social institutions and more a process that works the other way around: institutions shape the individual. In arguing this way, Smith almost anticipates Emile Durkheim, portraying individuals as released from the networks of mechanical solidarity by supervening institutions. In contrast to Durkheim, however, Smith evidently worries that, once freed, autonomous individuals remain in danger of collapsing into pernicious networks of organic solidarity, and paradoxically only social institutions seem able to prevent this.\textsuperscript{19}

Mainstream institutional economics is clearly much less suspicious of networks. Economists such as Ronald Coase, Oliver Williamson, and Douglass North acknowledged the importance of networks to economic activity.\textsuperscript{20} (By his own account, Coase’s seminal theory of “the nature of the firm” developed from his fascination with the long-term relationships between American corporations and their suppliers—relationships that we would now confidently call “networks.”)\textsuperscript{21} Yet the Coase tradition nonetheless portrays institutions as collective solutions to economic problems. In the best of all possible worlds, according to this view, the problems will be solved, the institutions will disappear, and purer markets will form around individual, autonomous, rational choices. In the last analysis, social institutions have economic explanations.\textsuperscript{22}

The sociological tradition lies closer to the Durkheimian side of Smith. Hence, the sociologist Mark Granovetter has vigorously challenged Coase and Williamson (and Alfred D. Chandler Jr.), arguing that social institutions are not the result of market failure, but rather represent the condition for markets to exist at all.\textsuperscript{23} This tradition also draws support from economists, most notably Thorstein Veblen, Karl Polanyi, and even Alfred Marshall.\textsuperscript{24}

Who falls on which side of this divide is, however, often hard to decide. Though at the margins they can be quite different, there is a great deal of overlap between the two traditions, which can make the simultaneous working out of the two perilous. This difficulty can be seen, for instance, in social capital theory, which builds on economics and on social theory. On the surface, social capital theory is relatively unified. Yet, to take two extremes, in the hands of James Coleman, the concept is ultimately reducible to economics (hence his use of the term \textit{capital}). In the hands of Pierre Bourdieu, by contrast, the concept is not reducible. In one, network effects, whether contributing to
economic action or other sociological behavior, are an epiphenomenon of the behavior of Smith’s autonomous individual. In the other, they are emergent social effects that do not reduce in any simple, causal way to autonomous individual agency. Overall, the difference between the two strands of social and economic theory developing from Smith is laid down clearly and boldly by Mark Casson in his discussion of “regional business networks,” when he argues as follows:

Social and economic phenomena are explained as outcomes generated by the interaction of numerous individual decisions. Economic does not regard organic concepts such as “community” as fundamental, but rather as derivative from individual actions.

By contrast, Richard Swedberg and Mark Granovetter argue that economic action is embedded in ongoing networks of personal relationships, rather than being carried out by atomized actors: By “network” we mean a regular set of contacts or social connections among individuals or groups.

Business history straddles the division between these two positions. It employs many of the tools of economics but also makes use of the categories of sociology. It is lured (or castigated) from proponents on both sides. Casson suggests that the field should be led by economists; Granovetter that it has been misled by them. Contemporary economic developments may confuse us further. For example, Marshall showed the power of networks in his discussion of industrial clusters, yet he argued that these entrepreneurs would escape with better communications technology: “Every cheapening of the means of communication alters the action of the forces that tend to localize industries.” Studies of recent clusters suggest, however, that rather than running away from networks as technology improves and becomes cheaper, economic organization may run toward them. The epicenter of the modern communications revolution, Silicon Valley, is also the poster child for modern clustered networks.

One way to explore these questions is to consider in detail how networks work and what they provide, a task taken up by the essays in this volume. In many accounts, networks deal with principal-agent problems by providing mechanisms for trust. Within networks, people build social capital by proving their reliability, which the network stores, signals, and endorses. This argument seems acceptable to both sides of the debate. Nevertheless, as the essays indicate, trust is a complicated issue. In describing
the Madeira trade, for example, Hancock makes the argument that networks are indeed mechanisms for assessing trustworthiness, but that using social networks for economic purposes entails social obligations. What from one perspective appears to be an economic resource, from another, as the Madeira merchants discovered, acts as a social constraint. Moreover, as often happens with complex social systems, resources may be inseparable from constraints.

Networks are used not merely to assess honesty, but also to measure capability. The person offering a good or a service may be perfectly honest, but does he or she have the necessary skill required? Capability, like honesty, may not readily be separated from an embedding network, particularly when the capability under assessment is complex, requiring both objective and subjective skills, such as the ability to judge quality, an important skill in the world of wine. The task is further complicated if the person requiring the goods or service lacks that capability him- or herself. Many market exchanges take place across such gulfs of expertise in conditions where the differences of knowledge and ability are such that no exchange of information is likely to achieve symmetry. The challenge of hiring expertise that we lack ourselves is discussed by Kenneth Arrow, who points out that, if we can assess the capability on offer, we may not need to hire it, but if we need to hire it, we probably cannot assess it. This tricky dilemma is one faced regularly in the world of knowledge—when we need the services of, for example, an academic institution or of a professional, such as doctor or a lawyer. It is also faced in the world of complex goods like wine, when we have to take someone’s word that a product that tastes indifferent to us now will taste excellent in ten years (or vice versa). Arrow’s answer is that, in order to work in these conditions, we must rely on institutions. Some of these are formal (such as credentialing institutions, medical societies, or bar associations), some informal (such as networks of peers who collectively lend credibility to individuals).

In both these matters of trust—honesty and capability—the answers we get to inquiries are not simply functions of the attributes of individuals per se but depend as well on our location in networks of social relations. As Barry Wellman puts it, social behavior is not “the result of individuals’ common possession of attributes and norms [but] . . . the result of their involvement in structural relations.” With this in mind, it is possible to recognize the challenge presented by the wine networks discussed in the
papers that follow. Quality had to be assessed at various locations in the networks that brought wine to market. If the assessment of quality was a function of location, then the idea of an objective sense of quality shared by the network as a whole is untenable.\textsuperscript{36}

Economists have admitted difficulty in wrestling with notions of quality. George Stigler, for one, candidly acknowledges that “quality has not yet been successfully specified by economics, and this elusiveness extends to all problems in which it enters.” Adam Smith, too, was remarkably skittish about the issue, obliquely undermining the standard Latin tag to argue, “Quality is so disputable a matter, that I look upon all information of this kind [i.e., about quality] as somewhat uncertain.” Undoubtedly, some proxies can be deployed to deal with problems of quality, but these are often crude. For example, mixing different notions of “quality,” Adam Smith suggests that the aristocracy was a reasonable proxy for virtue, because “the undistinguished mob of the generality of mankind” lacked the wisdom to judge virtue for themselves. (In relying on “the quality,” of course, Smith was putting his faith in a highly elaborate social network.) Equally, Stigler, George Akerlof, and others have pointed to brands and regulation as proxies for quality, and these are both explored in the following papers.\textsuperscript{37} Simpson discusses the development of the collective public branding of the regulated appellations in French wine regions, while Silva Lopes and I take up the deployment of privately owned brands as alternatives to regulation. Like aristocrats, brands and regulation too can be fairly crude proxies for quality and may still rely on networks to do their work. Hence, to understand the real issues of trust and quality, we need to look beyond the proxies to the details of the social networks themselves, which is what these papers do.

Hancock’s paper addresses the potential dysfunctionality of networks, which he rightly calls a “neglected part of the story.” His account of madeira merchants and the networks in which they were often too deeply enmeshed indicates the ways in which taking advantage of network resources often incurred obligations. Balancing these two—the resources and the obligations—could be fraught with difficulty. The networks he describes are both commercial and personal, but not in any easily separable way. Family ties gave access to political patronage, to other institutions (such as the legal system), to systems of trust, and of course to capital. And it was hard to gain access without becoming tied in to intangible and unpredictable social obligations—just as it is hard to get capital today without incurring sets of more tangible legal obligations. So relying on
networks was evidently not a simple endeavor. On the one hand, by supporting entrepreneurship, they allowed merchants to supplement inadequate financial capital with networks of social capital. But, on the other, by tying merchants with social obligations, these same networks could bring down merchants with more than sufficient financial capital.

The madeira networks were not only significantly personal; they were also nonhierarchical. This does not, of course, mean they were egalitarian. They were evidently rife with power struggles. But they had no “established system of authority”—thus meeting one of the defining features of networks from a sociological perspective, but leaving open to empirical analysis both the degree of “direction” (to use Richardson's term) involved in the network relation and the question of who might direct and who might be directed. While flexibility could be a strength, lack of direction could be a major problem, especially in circumstances when, as Hancock describes it, “every principal is an agent.” This characteristic of networks is ultimately paradoxical if we accept Smith’s notion that “in a free trade an effectual combination cannot be established but by the unanimous consent of every single trader.” As Hancock’s article suggests, the need for unanimity can undermine the very effectiveness that Smith assumes it creates.

My paper implicitly responds to Hancock’s, as I investigate the alternatives available to merchants who were faced with the frailty of broad, egalitarian networks. I trace the extraction of port “commodity chains” from the more amorphous networks of general merchants in the trade and show how the power of direction accumulates at specific points. This ultimately successful strategy of extracting chains from networks may have been in part a response to the challenges of knowledge and quality thrown up by the trade in premium wines. The wine exporters, with limited knowledge of viticulture, gained access to the knowledge they needed by exchanging patronage, power, and market access for the judgment and access to social networks possessed by their rural agents. The exchange also brought loyalty. Networks, it has been argued, help amplify the search for knowledge. By the same measure, they also help to diffuse knowledge, which is not particularly helpful when knowledge is a strategic asset. Tying their agents into commodity chains, the port merchants managed to strike a compromise between the ability to find knowledge and the ability to hold onto it. One way that loyalty can be tied in is, of course, through employment contracts. Yet John Ziman and Kenneth Arrow have
both argued that experts make problematic employees, because their loyalties are divided between their organization and their networks of expertise. Although Ziman and Arrow are discussing scientists, their argument need not exclude the knowledge acquired by wine brokers. Consequently, the challenges of expertise may in part explain why these agents remained links in a chain, rather than employees in hierarchical organizations. Ultimately, however, as my paper goes on to show, these particular commodity chains became hierarchies, as the need for authority trumped the reach and flexibility of the networks.

Simpson’s paper takes up the account more or less at the chronological point where mine leaves off. But Simpson moves the scene from the Portuguese wine trade to France and focuses more directly on the growers. His paper also addresses the complex economics of quality, noting that, in most French regions, two types of commodity chain developed: one to deal with premium wines and the other to handle table wines. These different networks had very different characteristics, which emerged most starkly in times of crisis, such as the period Simpson covers in the late nineteenth century, when phylloxera, a highly destructive pest, attacked European vines. The crisis, and its aftermath, imposed severe strains on the established networks of the sector. Not only did the situation raise questions of credibility and reliability as merchants tried to substitute inferior wine—a technique that worked better for the table wines than for the premium-wine chains. It also elicited contrasting responses to doubts such practices raised about honesty and capability within the chains. The table-wine regions sought collective solutions in cooperatives and regional apppellations. Their goal was to build horizontal networks of producers, who, with government regulatory help, would protect the reputation of the wine. These networks were also designed to maintain the producers’ prices, guarding them against the strategies of the merchants, who tried to take advantage of the surpluses that emerged after the phylloxera crisis by driving down prices and so increasing their own returns from the chain. The premium-wine commodity chains took the opposite path. In place of the collective brands of the appellation, they sought the individual brands of private labels. This strategy enabled individual firms to rise above the generic identity of the region and, in the process, to extract rents from the rest of the commodity chain. While the table-wine chains sought collective strength through a horizontal network, the premium-wine chains sought individual control in a vertical
Simpson’s paper highlights two important aspects of wine-trade networks: the nature of the commodity and the role of government. The phylloxera crisis prompted a debate over what constituted the wine of a particular region or type (could it include grapes from outside the region?) and what counted as adulteration.\textsuperscript{42} Equally, the response to the crisis involved significant government intervention to protect the wine sector.

These themes return in Silva Lopes’s paper, which expands the debate to include the alcoholic-beverage sector in general and takes the account up to the beginning of the twenty-first century. In her paper, she notes that Portugal had a strong wine sector and was particularly notable for its production of port and madeira, which were sold on the international market. Yet, unlike other European countries with strong alcoholic-beverage industries, Portugal failed to develop a multinational firm in this sector during the wave of mergers and acquisitions that unfolded in the 1960s. Two central factors are evident in this failure. One is the nature of the commodity. Merging firms sought, among other things, advantages of scale. Beer and spirits generally can be readily produced on a mass scale and, if necessary, in multiple countries. Wines cannot. Hence large brewers (Heineken and Guinness, for example) were well suited for growth. Port firms, rooted by tradition and by law within the confines of the Douro River valley, were by contrast limited in their potential either to grow or to appeal to multinationals.

Another central factor has been the role of government intervention. Peter Dicken and his colleagues note that “the regulatory environment created by different states is . . . an immensely formative influence on network development,” and, as Silva Lopes shows, the protectionist, anticompetitive regulation in Portugal limited the international networks that Portuguese firms joined, pushing them toward former colonies and away from the developing markets of the sector.\textsuperscript{43} As a consequence, the Portuguese firms became relatively isolated, unable to tap into the sorts of knowledge that internationalization required. In particular, they concentrated on production at the expense of marketing, though knowledge of the latter was far more important for expanding trade networks. This argument leads again to the topic of brands. The relatively uncompetitive internal market deprived Portugal of the sort of powerful brands that allowed firms to extend their reach into distant markets and impose authority on otherwise nonhierarchical networks.
Silva Lopes thus returns to a theme running through all the articles and the networks they describe: the challenge to balance the power of networks against their inherent lack of authority, their flexibility against their absence of rigidity.

These four papers do not resolve the issues I have raised here, but in discussing important questions of trust, quality, power, and flexibility in the context of networks, they provide, from the perspective of economists and historians, grist for the mill of an important debate. They resist the idealization of networks, showing why people sought them but also why they shunned them. They also resist the idea that networks are a measure of the new, suggesting instead that, like wine itself, they have continuously developed across geography and through history.


York, 1963). While many failed to say what a network is, even more failed to say what it is not—what alternative arrangements might exist that could not equally be described as a network. The concept thus became a catchall. Unfortunately nets that catch everything are little more use than nets that catch nothing. Champions of actor network theory, who worked hard to polemicize the term, have abandoned it. See Bruno Latour, “On Recalling ANT,” in *Actor Network Theory and After*, eds. John Law and John Hassard (Oxford, 1999), 15–25.


8 The new embrace of commercial networks has been so confident that Podolny and Page wonder with enjoyable irony why, if networks are so good, we ever have markets and hierarchies. Joel M. Podolny and Karen L. Page, “Network Forms of Organization,” *Annual Reviews of Sociology* 24 (1998): 57–76.

9 Though Tennyson missed the wheels on which they ran—when he traveled on the first train to run from Liverpool to Manchester, the station was so crowded that he couldn’t see the undercarriage and thought the train ran in grooves—he was confident of the train’s ability to symbolize change. See Alfred Lord Tennyson, “Locksley Hall,” *The Works of Alfred Lord Tennyson, Poet Laureate* (London, 1888), 98–103.


12 See Merritt Roe Smith and Leo Marx, eds., *Does Technology Drive History? The Dilemma of Technological Determinism* (Cambridge, Mass., 1994), and in particular, for the difficulties of business history, the following essays: Thomas P. Hughes, “Technological Momentum,” 101–14; Thomas J. Misa, “Retrieving Sociotechnical Change from Technological Determinism,” 115–42; and Philip Scranton, “Determinism and Indeterminacy in the History of Technology,” 143–68.

13 Castells fuses technology and organizational form in the example of Cisco, which appears both as the producer of network routers and the ideal of the networked firm. See Manuel Castells, *The Internet Galaxy: Reflections on Internet, Business, and Society* (New York, 2001). One curious outcome of this way of thinking was that the standard appeals for technology that could better match social and organizational forms were, in the hands of “business process reengineering,” transformed into demands that we “forget all we know” and develop organizational forms to match our technology. See Michael Hammer and James Champy, *Reengineering the Corporation: A Manifesto for Business Revolution*

15 In the light of what has been said above about the enthusiasm of the information age for networks, it is worth noting that Brook’s law, which might well outlast Moore’s law, is in fact a law of network dysfunction. Frederick P. Brooks, *The Mythical Man-Month: Essays on Software Engineering* (Reading, Mass., 1982).

16 For literature that is particularly relevant for business history, see the discussion in Hancock’s and, more briefly, in my article in this issue.


solidarity, see Emile Durkheim, *The Division of Labor in Society* (Glencoe, Ill., 1960).


Although he claims his approach “is not inconsistent,” Richardson in fact challenges the Coase tradition by questioning the market and hierarchy dualism that is developed from Coase’s theory of the firm. See Richardson, “The Organisation of Industry,” 896n.


See, for example, Robert D. Putnam, Making Democracy Work: Civic Tradition in Modern Italy (Princeton, 1993); Francis Fukuyama, Trust: The Social Virtues and the Creation of Prosperity (New York, 1995).

31 See DiMaggio and Louch, “Socially Embedded Consumer Transactions.”


34 The case of white Burgundy wines from 1996 exemplifies the problem. These were sold as exceptional wines with a great future. Now, when they should be ideal, they are turning out to be less than mediocre. See Mike Steinberger, “The Murder in the Wine Cellar: The 1996 White Burgundies Are Dying Young. Why?” Slate, 6 July 2003. On line: http://slate.com/id/2121743/, visited 12 July 2005.


38 Podolny and Page define a network as “any collection of actors \( N \geq 2 \) that pursue repeated, enduring exchange relations with one another and, at the same time, lack a legitimate organizational authority to arbitrate and resolve disputes that may arise during the exchange.” Podolny and Page, “Network Forms of Organization,” 52. Richardson, “The Organisation of Industry,” points out that, rather than a simple binary distinction between markets and hierarchies, industrial relations are typified by degrees of “co-operation” and “direction” and that such relations may be open to “infinite variation” (p. 896). It may be this claim that makes Richardson’s work less appealing than Coase’s to those who wish to make economic models.


42 These questions are perennial in the wine trade. They are still being fought today; see, for example, James Laube, “Napa’s Name Down the Drain,” Wine Spectator, 15 May 1999.

43 Peter Dicken et al., “Chains and Networks, Territories and Scales: Towards a Relational Framework for Analysing the Global Economy,” Global Networks 1 (2001): 89–112; the authors are developing an argument from Whitley. See Richard Whitley, “Business Systems and Global Commodity Chains: Competing or Complementary Forms of Economic Organization,” Competition and Change 1 (1996): 411–25. As Teresa da Silva Lopes’s argument makes clear, the successful firms were not free from government regulation; they were merely subject to a different kind of regulation, one that ultimately favored internationalization. For a similar argument on the beneficial (but often invisible) effects of regulation, see J. Barker, N. Lewis, and W. Moran, “Reregulation and the Development of the New Zealand Wine Industry,” Journal of Wine Research 12 (2001): 199–221.