

Toward Digital Intermediation in the Information Society

Author(s): Richard Hawkins, Robin Mansell and W. Edward Steinmueller

Source: *Journal of Economic Issues*, Vol. 33, No. 2 (Jun., 1999), pp. 383-391

Published by: Taylor & Francis, Ltd.

Stable URL: <http://www.jstor.org/stable/4227450>

Accessed: 10-01-2017 09:21 UTC

---

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at  
<http://about.jstor.org/terms>



*Taylor & Francis, Ltd.* is collaborating with JSTOR to digitize, preserve and extend access to *Journal of Economic Issues*

## Toward Digital Intermediation in the Information Society

*Richard Hawkins,  
Robin Mansell,  
and  
W. Edward Steinmueller*

The new interactive services associated with the development of the Internet seem to promise dramatic changes in the organization of commerce. If this promise is fulfilled through the emergence of digital intermediation, important implications will follow in the adjustment of existing firms to compete with new service providers.<sup>1</sup> A principal issue at the heart of the adjustment process concerns uncertainty about the extent to which the dematerialization of economic activity is likely to become a reality.<sup>2</sup> Dematerialization presupposes a capacity for "digital intermediation," but some aspects of intermediation may require physical presence and associated organizations. In addition, "disintermediation"—the process of eliminating traditional intermediary firms—challenges the business of many existing companies. The implications of electronic intermediation or *disintermediation* are considerable, given the significance that is being given to the growth of electronic commerce as the future mode of transaction for many commercial activities.

Some types of commercial activities appear to be more receptive than others to the implementation and diffusion of electronic commerce. In this paper, we consider some of the assumptions that underlie the more optimistic expectations for this new

---

*The authors are Research Fellow at SPRU, University of Sussex; Professor of Information and Communication Technology Policy at SPRU, University of Sussex; and Professor of the Economics of Technical Change and Innovation at SPRU, University of Sussex, respectively. This paper was presented at the annual meeting of the Association for Evolutionary Economics, New York City, New York, January 3-5, 1999. An earlier version was prepared for the European Commission ACTS FAIR project, Working Paper no. 50, SPRU, March 23, 1998. Support from the European Commission is gratefully acknowledged. The views expressed in this paper are those of the authors and not of any institution or organization.*

market environment and the likely role of incumbent firms as they move into "cyberspace" markets.

### *Digital Intermediation of the Commercial Environment*

Electronic commerce provides an ideal laboratory for examining the extent to which digital intermediation is becoming a major factor for the economic viability of incumbent firms. Electronic commerce is more than simply another application of information and communication technology. People and institutions decide when, why, and where to acquire "staple" and "discretionary" goods and services according to complex social and cultural criteria. The ability to valorize goods and services in a market economy was first learned in a "materially based" social context. In a digitized, dematerial environment, many of these social skills will have to be relearned [Neice 1998]. For sellers of goods and services, this highlights the challenges involved in replacing material transaction and product environments with dematerial ones. Established trading communities continue to play very influential roles in cyberspace. An important question is whether and how soon the economic performance of established traders in the conventional marketplace might be replicated in cyberspace.

Electronic commerce can be defined as the application of information and communication technologies to any or all of three basic activities related to commercial transactions: production and support, transaction preparation, and transaction completion. This approach defines electronic commerce in terms of a structure of intermediary functions. Some of these functions are more likely candidates than others to be intermediated or, in some cases, disintermediated. Some analysts of the growth potential of electronic markets assume that existing intermediation of commercial processes is inherently economically inefficient and that one of the chief advantages of electronic commerce is that these processes can be *disintermediated*, thereby putting more buyers directly in touch with producers [Leebaert 1998]. This expectation has deep historical roots. The role of commerce relative to manufacturing or agriculture has always been held in suspicion.<sup>3</sup> Although examples of disintermediation certainly exist, the value of disintermediation as such may be questionable to many kinds of producers, sellers, and customers.

There is a persistent tendency for information and communication technology markets to be "technology led" and for suppliers to be in favorable positions to enmesh their clients in path dependent relationships with technologies [David and Steinmueller 1990; Steinmueller 1994]. Large corporate users have often played dominant roles in the development of Electronic Data Interchange (EDI) and Value Added Network (VAN) applications [Schmidt and Werle 1998]. The general pattern has been for (often incompatible) EDI and VAN applications to be developed within discrete, sector-based trading communities such as banking, transportation, and re-

tail. In the process, substantial in-house design and operations capabilities have been generated in user firms—particularly in large firms that dominate industry sectors. Most of the economically significant uses of electronic commerce still occur between firms within supply and distribution chains [Hawkins 1998].

Disintermediation may lead to more open market structures, and it may weaken the revenue-generating potential of whole industries. Many leading implementers of electronic commerce are also among the leading innovators in terms of the specification and configuration of trading systems. If we accept the possibility that as electronic commerce diffuses more widely, and hurdles in the supply and demand relationships between technology and service suppliers and business users are leveled to some extent, there remains the possibility that some traders in the marketplace will be in a stronger position than others to influence the technological and service paradigms for electronic commerce and to determine the terms of market entry and participation [Hawkins 1998]. Traders are unlikely to embrace electronic commerce with the intention of giving up advantages in the market they already enjoy. Traders become proactive in electronic commerce because they perceive that it will confer advantages that might not be available (or not available to the same extent) in the conventional marketplace or because they are threatened by rivals seeking these advantages.

### *The Dynamics of Intermediation and Disintermediation*

The characteristics of the evolving intermediation picture are evident in the position of banks with respect to developments like electronic cash. Although banking will remain a necessary function, banks as such may not always be needed [Srivastava and Mansell 1998]. The extent of their participation in establishing electronic cash systems is open to question because banks may not be the only organizations that can issue electronic cash. Banks can be disintermediated very easily in this market by any number of players such as telecommunication companies, Internet Service Providers (ISPs), and information and communication technology companies. Nevertheless, banks may be needed to lead the innovation process [Hippel 1998]. Banks have the necessary government support and legal jurisdiction to create stores of monetary value, a privilege that is heavily regulated.

Banks might use their existing, officially sanctioned intermediary functions, such as clearing and settlement, in order to capture a protected structural position in the electronic cash market. The electronic cash approaches like Mondex, DigiCash, and VisaCash display variations in their relationships to the clearing function. Of the three systems, only Mondex does not need a third party to settle and clear transactions between its users. This has the advantage of increasing the speed and adding to the simplicity of the transaction.<sup>4</sup> The greater the degree of centralization in the

technical architecture for clearing and settlement, the greater the commercial opportunities for centralized financial institutions like banks.

There is the prospect that, in some cases, incumbent firms and their supporting institutions will try to thwart disintermediation in order to retain their customer base. By developing electronic cash systems of their own, banks can accomplish this while benefiting substantially in other areas such as saving on cash-handling costs. In addition, banks can link electronic cash to their other banking services on the same smart cards. This has the potential for fostering customer allegiance and even "lock-in," which would be profitable for banks and meet the threat posed by *disintermediation*.

A critical factor in digital intermediation is supply chain control. In the medium to long run, there are advantages in a dematerial commercial environment for firms that learn to exploit entrepreneurial niches while at the same time retaining control over supply chains and the transaction structures embedded in them [Hawkins 1998]. This control allows firms to exercise flexibility in deciding which products to transpose into a dematerial distribution mode and when to transpose them.

As illustrated by the electronic cash example, where changes in the intermediation structure occur, a more likely scenario than outright disintermediation is for various kinds of value to be transferred via alternative delivery mechanisms. This produces a process of "re-intermediation" in which the control of different elements in the value chain may move to different players.

### *The Evolving "Incumbent Factor" in Intermediating Commercial Relationships*

There appears to be less of a case than is commonly supposed for commercial disintermediation. The significant factor in a dematerializing environment is change in the intermediation structure itself. The principal issue is the role of incumbent traders in reacting to or actively shaping these changes. The development of electronic markets seems more likely to be evolutionary than revolutionary. Although economically significant communities are forming around new entrepreneurial initiatives that are born in a cyber environment in the first instance, the predominant activity is likely to be sustained in the longer run by incumbent commercial communities of firms.

Specific types of incumbents possess an institutional legitimacy coupled with a level of technical experience that makes the possibility of launching new services without their presence unlikely. For example, for at least the last 30 years banks have been learning incrementally how to manage their information and financial networks more efficiently through the application of information and communication technology in operational areas [Credé 1997]. Banks are in the advantageous position of being guarantors of monetary value of this new payment medium, and they are not disadvantaged technologically. They have latent reserves of customer trust

and pre-existing regulatory frameworks that most industry observers believe will be necessary both in the pre-launch and post-launch phases [Srivastava and Mansell 1998].

One common assumption about the effects of digital intermediation is that inter-organizational relationships will become steadily more "virtual." A virtual enterprise can be defined as an electronically intermediated commercial collaboration in which entry to and exit from the structure is flexible and determined on an "as required" basis. This model is the apogee of much current management thinking about computer-integrated business and logistics processes. It is predicated on the assumption that business partnering in an electronic environment will be highly price sensitive and that one of the principal advantages of computer intermediation is to lower the costs of forming and operating dynamic, temporary business structures [Dyson 1997].

However, firms also place value on cultivating *stable* communities. As firms mediate more business processes and networks electronically, historical experience with partners and their technological capabilities become important factors in partner selection and collaboration management. Moreover, information pools that develop through commercial exchanges and collaboration can become commercially sensitive. There can be high incentives to share this information fully only with trusted partners. In short, in some (perhaps most) cases, digital intermediation may act to solidify commercial relationships among incumbents, rather than to loosen them.

Past linkages are important to business evolution and substitution. Organizations that have had profitable interactions in the past are more likely to collaborate in the future. For example, it was partly due to Barclays' relationship with Visa that the bank decided to run a Visa electronic cash pilot. Collaboration is necessary, especially in the early stages of product development, particularly as standards and regulatory instruments must be developed in a collaborative environment. Competition follows the launch of the product. The network of firms that developed the new product or service environment in the first place has an advantage in terms of understanding, implementing, and controlling subsequent development of the technology.

The evolution of banking services shows that incumbent organizations are facing increasing competitive pressure to provide a larger and more varied range of financial services. In order to do so, they must rely on both internal and external learning processes to accumulate the know-how to innovate technologically as well as in terms of service concepts. This involves interactions with other agencies, including equipment suppliers, in which user firms act as collaborators or even leaders in the innovation process. Commercial users are becoming more significant as "makers," and not just as procurers, of information and communication technology and services. Defining viable product and services markets in a dematerial environment is the principal concern of commercial traders. This involves defining the position and

value of various kinds of information. In a dematerial environment, data about material products become products in their own right.

### *Digital Intermediation and the Transaction Structure*

The relative market power of the incumbent and new entrants in interactive service markets depends on the characteristics of the *whole transaction structure* [Hawkins 1998]. Transactions can be defined to include *any* exchange between participants in a market that is directly or indirectly related to the acquisition of goods and services, irrespective of whether these goods or services are finally acquired. Some transactions involve product and service delivery and the direct exchange of money, while others are exploratory, involving the acquisition of market information, advertising, personal inquiries, etc. The main operational factor at a transaction point is the intent to provide or acquire goods and services. Access to information can be just as vital to the transaction structure as access to the goods and/or services being traded. The future for many entrepreneurs may be in the exploitation of ancillary facilities like these for commercial provision of high value-added information services about products and services, material and dematerial.

Particularly for diversified incumbents, value often can be added easily to their on-line facility by providing a basket of related or derivative products at the same site and by exploiting the existing market visibility of particular brand names. This possibility is especially likely in the media industries, which tend to be dominated by conglomerates.<sup>5</sup> There is value in maintaining links between material and dematerial environments. In the United States, for example, automobile manufacturers are beginning to sell cars on the Internet. Some customers purchase cars in this way, but most use the dematerial environment to compare prices and specifications, the results of which are used in negotiations with dealers in the material environment. The existence of the dematerial environment thus reinforces, rather than substitutes, for other sales efforts.

An important aspect of the evolutionary scenario is the transfer of knowledge and competencies that can occur between entrepreneurial start-up cyber firms and incumbent traders. There is nothing new in this, and the risks for "first movers" are as well documented historically as the benefits [Klaes 1997; Teece 1986]. However, it seems unlikely that the entrepreneurs in the electronic commerce market will be able to sustain a competitive lead in the marketplace once the major players arrive. The main first-mover advantages identified by the entrepreneurs are the opportunities to build customer loyalty and to develop competitive advantage through acquiring tacit knowledge and information about customers' shopping habits. However, where significant consumer demand has not materialized and on-line profits are minimal, such advantages are unlikely to yield a sustained competitive edge. The main disadvantages facing the large retailers are associated with organizational,

rather than technical, problems. These disadvantages are likely to be outweighed by the benefits relating to their dominance in terms of market share. Most importantly, the larger companies have the resources to promote on-line retail outlets heavily whenever it seems advantageous to do so. This, plus retention of their existing dominant market share, is likely to enable them to compensate for any first-mover advantages that may accrue to the early entrepreneurial cyber firms that appear.

The mythology surrounding the cyber trader phenomenon is that start-up entrepreneurs can gain special advantages over incumbents by using information and communication technologies to minimize the requirement to maintain material facilities [Hawkins 1998]. But cyber firms tend to be niche market players, and these niche opportunities may be of limited duration. In the long run, where first-mover advantages might be available in niche markets, they are just as likely to be captured by firms that can learn to exploit existing brand images in new ways and that can control key supply chains and transaction points in a given market segment.<sup>6</sup> Even if first-mover or "specialist knowledge" advantages for cyber traders exist, they are likely to be transitory. The key issue is how to sustain and build a market position, not how to acquire one.

### Conclusion

The main obstacle to market acceptance for new digitally intermediated services is the oldest obstacle of all: customer difficulty in perceiving the advantages of these services. An essential role can be provided in the intermediation process by the development of virtual communities based upon interaction between users of electronic communication [Steinmueller 1998]. Because these communities are located in virtual space already, they have the potential to reference and to include information essential to matching their ongoing discussions of products and services with suppliers. Stronger development of the social interactions in the use of network communication is likely to put a greater focus on the means of acquiring products and services electronically. While substantial cost saving appears to be possible by reducing or eliminating the traditional modes of distribution, the costs of new forms of intermediation, the need for which is often not apparent prior to implementation, are proving to be substantial [Steinmueller 1998].

What appears to be disintermediation is often in fact "re-intermediation" [Hawkins 1998]. The intermediation *function* remains even though the sources and/or the nature of the intermediation are changing. On balance, there is greater evidence to support the argument that intermediation will grow and become a strategic source of economic opportunity. There is less evidence supporting the view that economic gains in an electronic marketplace will be made through efficiency gains from disintermediation.



Supplier and user trust and confidence in electronic commerce and related electronic networking activities require much more than the technical capacity for digital intermediation. In many instances, producer and consumer advantages are gained because of complementary intermediary processes that exist in both the physical and virtual worlds. An important feature of the evolution of new electronic markets is the transfer of knowledge and competencies between entrepreneurial start-up cyber firms and incumbent firms. There is some evidence that the strong economic performance of established traders in conventional marketplaces is being replicated in cyberspace markets. The focus of future empirical research needs to be concentrated on the emergence of new processes of re-intermediation whereby control of different elements in the value chain moves to different players. The complete chain of transaction structures will need to be considered in assessing whether new market opportunities are likely to be open to smaller firms and new entrants or whether the process of re-intermediation will be undertaken mainly by incumbent firms.

### *Notes*

1. See Mansell [1997] for an analysis of relationships between incumbent, insurgent, and virtual community firms in the market for communication services.
2. "Dematerialization" refers to a shift from an economy that values material production to one that values knowledge. The process of dematerialization implies a growing preference for the dematerial environment as a site for production and consumption [Herman et al. 1989; Quah 1996].
3. The Twentieth Century Fund commissioned a study on the costs of distribution. The study's conclusions might well appear in a contemporary prospectus for electronic commerce: "[the answer to the question] does distribution cost too much?—is 'yes'. The research findings prove this in two ways. First they show many features of the distribution process which reveal opportunities for savings; duplications of sales efforts, multiplicity of sales outlets, excessive services, multitudes of brands, and unnecessary advertising—all caused by competitive conditions; unreasonable demands and misinformed buying on the part of consumers; and, among distributors themselves, lack of a proper knowledge of costs, too great zeal for volume, poor management and planning, and unwise price policies. Second, the research findings show how newer distribution agencies, through economies of standardized and large-scale operation, have proven the inefficiency of those which they have displaced; and how other distributors have improved methods and lowered costs through a better understanding of their problems" [Stewart and Dewhurst 1929, 348].
4. DigiCash worked by transferring funds anonymously between conventional bank accounts over the Internet, but it declared bankruptcy in November 1998 ["Keep the Change" 1998]. VisaCash uses smart card technology similar to Mondex in order to load predetermined cash value, but it utilizes centralized clearing and settlement facilities similar to credit card operations.
5. An example is WH Smith, the U.K.-based bookseller and stationer that is one of the parent companies of Virgin/Our Price, the record retailer. Together, WH Smith and Virgin developed Virgin Entertainment Direct (VED), an early entrant to the U.K. on-line music market. The Virgin brand name was considered to be more appealing to an Internet envi-

- ronment than that of WH Smith, but VED could also merchandise the books and magazines associated with the parent company [Janson and Mansell 1998].
6. For example, the five major U.K. recording companies also own and operate their own production, manufacturing, and distribution systems through which they provide both their own and some of their competitors' products to retailers, wholesalers, and smaller distributors [Janson and Mansell 1998].

## References

- Credé, A. "Technological Change and the Information Society: An Examination of Credit Risk Assessment and Cash Handling Procedures in Commercial Banks." Unpublished Ph.D. diss., University of Sussex, Brighton, 1997.
- David, P. A., and W. E. Steinmueller. "The ISDN Bandwagon Is Coming: Who Will Be There to Climb Aboard? Quandaries in the Economics of Data Communications Networks." *Economics of Innovation and New Technology* 1, nos. 1-2 (1990): 43-62.
- Dyson, E. *Release 2.0: A Design for Living in the Digital Age*. London: Viking, 1997.
- Hawkins, R. "Creating a Positive Environment for Electronic Commerce in Europe." FAIR Working Paper no. 36, SPRU, Brighton, March 1998.
- Herman, R., S. A. Ardekani, and J. H. Ausabel. "Dematerialization." In *Technology and Environment*. Washington D.C.: National Academy Press, 1989: 50-69.
- Hippel, E. von. *The Sources of Innovation*. Oxford: Oxford University Press, 1998.
- Janson, E., and R. Mansell. "A Case of Electronic Commerce: The On-line Music Industry—Content, Regulation and Barriers to Development." FAIR Working Paper no. 40, SPRU, Brighton, March 1998.
- "Keep the Change." *The Economist*, 21 November 1998, 99-100.
- Klaes, M. "Sociotechnical Constituencies, Game Theory, and the Diffusion of Compact Discs: An Interdisciplinary Investigation into the Market for Recorded Music." *Research Policy* 25 (1997): 1221-34.
- Leebaert, D., ed. *The Future of the Electronic Marketplace*. Cambridge, Mass.: The MIT Press, 1998.
- Mansell, R. "Strategies for Maintaining Market Power in the Face of Rapidly Changing Technologies." *Journal of Economic Issues* 31, no. 4 (December 1997): 969-89.
- Neice, D. C. "ICTs and Dematerialisation: Some Implications for Status Differentiation in Advanced Market Societies." FAIR Working Paper no. 43, SPRU, Brighton, March 1998.
- Quah, D. T. "The Invisible Hand and the Weightless Economy." LSE Centre for Economic Performance, Occasional Paper no. 12, Programme on National Economic Performance, London, April 1996.
- Schmidt, S. K., and R. Werle. *Co-ordinating Technology: Studies in the International Standardization of Telecommunications*. Cambridge, Mass.: The MIT Press, 1998.
- Srivastava, L., and R. Mansell. "Electronic Cash and the Innovation Process: A User Paradigm." FAIR Working Paper no. 35, SPRU, Brighton, March 1998.
- Steinmueller, W. E. "Economics, Compatibility Standards and Competition in Telecommunication Networks." *Information Economics and Policy* 6, nos. 3-4 (1994): 217-42.
- \_\_\_\_\_. "Virtual Communities Developments: Globally and in the ACTS and Telematics Application Programmes." FAIR Working Paper no. 46, MERIT, Maastricht, March 1998.
- Stewart, P. W., and J. Frederic Dewhurst. *Does Distribution Cost too Much?* New York: The Twentieth Century Fund, 1929.
- Teece, D. J. "Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing and Public Policy." *Research Policy* 15 (1986): 285-305.