

The Governance of Transaction by Commercial Intermediaries:

An Analysis of the Re-engineering of Intermediation by Electronic Commerce

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Abstract

Efficiency arguments explain why commercial intermediaries exist and will continue to be involved in the exchanges despite the spread of digital networks. Commercial intermediaries provide producers and consumers with a set of information, logistic, securization and insurance (and liquidity) services. By bundling these services and by dedicating assets and learning capabilities to their production, commercial intermediaries enable to economize on transaction costs. Digital network per se cannot enables transacting parties to benefit from such efficient providers of intermediation services. Rather than establishing direct relationships among producers and consumers, the Internet will support a re-organization of existing intermediation chains, because traditional intermediaries will reinforce their ability to provide these service by using ITs. The analysis of the role of commercial intermediaries thus leads to a better understanding of the futures of e-Commerce. In turn, e-Commerce provides New-Institutional Economics with a stimulating case to analyze the economics of commercial intermediation.

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1. Introduction

The notion of electronic commerce (e-commerce) has been gaining in popularity with the rise of commercial activities on electronic networks, especially on the Internet. In the academic world (e.g. Brynjolfson & Smith (1999), Shapiro & Varian (1999)) as well as in governmental organizations (e.g. OECD (1996,1998, 2000 b), Lorentz (1998), US Dept. Of Commerce (1998, 1999, 2000)), many optimistic analyses see the Internet as a way to completely re-engineer the relationship between the producer (good manufacturers and service providers) and the final consumer, leading to major productivity progress in transactional activities. This is essential since those activities became dominant in developed countries during the twentieth century (Porat (1977), Wallis & North (1986), Jonscher (1994)), while they were characterized by very slow progress in productivity. The Internet is often analyzed as a medium that will enable the establishment of a direct electronic relationship between producers and manufacturers. This is supposed to dramatically reduce transaction costs, because electronic communication is cheap, and because it will suppress most intermediaries in marketing channels.

There is however a strong gap between the above quoted optimistic discussions and forecasts about the potential of e-commerce and the reality. This gap is even greater when one compares actual facts to the notion of "New-Economy" popularized by the press (e.g. The Economist (1997), Wired (1999)). There are indeed interesting new ways of commercializing information and goods through the Internet and the commercial activity on the Network is growing. However, when one looks at the actual figures, e-commerce represents only a very tiny share of economic exchanges¹, and the firms that are really engaged in it are so few that the same ones are always quoted and studied : Amazon.com, Auto-by-tel, Cendant Corp., Dell, 1-800-Flowers, etc. Moreover, existing e-commerce sites do not generate significant profits. Amazon.com has around

22,5 million clients (in the year 2000) all over the world, but does not make a dollar of profit². Last but not least, none of these examples at all illustrate the promised frictionless market without intermediaries, since most of them are commercial intermediaries.

This hiatus is often analyzed as a simple transition problem. The technology, suppliers' strategies, and consumers' habits have to evolve to enable the realization of the full potential of electronic intermediation. This interpretation is however only partially satisfying since many experiments in e-commerce have been being carried out over the last twenty years. Indeed, the idea of bypassing commercial intermediaries, establishing direct links among producers and customers, and selling worldwide thanks to telecommunication networks is not new. In the US (e.g. Faulhaber et al (1986), Malone (1987), Brousseau (1993)) and in Europe (Brousseau (1990), OECD (1998b), huge efforts have been devoted to the development of electronic markets. All these experiments demonstrate that there are many obstacles to the full "electronization" of commercial transactions (both because strong adverse selection and moral hazard problems occur). They also show that electronic markets maintain, most of the time, intermediaries (e.g. airline computer reservation systems, electronic trading systems in the finance industry, etc.).

The facts therefore seem to point out that the development of e-commerce does not lead to the substitution of commercial intermediaries (commercial intermediation) by electronic networks (electronic intermediation). This obviously does not mean that electronic commerce will not develop, but rather that it will probably develop along a different path than the one often forecast today. The aim of this paper is thus to get a better understanding of what this path could be. From a more theoretical point of view, this paper relies on a New-Institutional assessment of the role of commercial intermediaries. Indeed, markets and transaction chains are not only organized by institutions, they are also managed by intermediaries. The essential difference between an

intermediary and an institution is that the former is a market player, while the latter is a market organizer. Indeed, as pointed out by Spulber (1996), intermediaries ensure the liquidity of markets by holding inventories and cash. They are actual counterparts in transactions among economic agents because they temporarily hold the property rights that are transferred between transactors, and therefore take risks. This is not the case for institutions. They are neutral within each transaction. Their role is to provide transactors with more transparent and less costly market places (for an analysis of the role of institutions in electronic markets, see Brousseau (2000)). From a theoretical point of view, the organization of e-commerce is interesting since it shows the essential economic role of intermediaries in fields other than finance, whereas the bulk of the economic literature is dedicated to financial intermediaries (see the collected papers by Lewis (1995)).

The paper is organized as follows. In section 2, some essential facts about the development of e-commerce are highlighted. This will enable me to clarify some definitions and to specify the purpose of the paper. Section 3 will propose an analytical framework to assess the role of commercial intermediaries. It will be used in section 4 to better understand the economics of commercial intermediaries, in section 5 to analyze the ability of Information and Communication Technologies (ICTs) to substitute for human or organizational intermediation. This will lead me to question in Section 6 the paths of development of e-commerce.

2. e-commerce development and productivity gains in information economies

e-commerce is not an anecdotal issue. It has to be linked to two major features of growth in our modern economies: the rise of an information- and knowledge-based economy and the spread of information technologies. Initiated by Machlup (1962), Bell (1973), and Lamberton (1974), the

thesis of a rise of an information society was more deeply investigated by Porat (1977) and Jonscher (1983, 1994) who studied the evolution of the workforce allocation in the US in the long run. This pioneering work was confirmed by Davis & North's (1986) work on the transaction sector. All these quantitative studies can be interpreted as follows. Since the end of the eighteenth century, the need to increase productivity has led to two major movements: the substitution of capital for labor and the division of labor. The former led to the distinction of coordination and productive activities and the latter applied only to production activities. For a long time, productivity gains were very low in the coordination activities, and this began to be a major problem by the middle of the twentieth century when these activities became significant, then dominant, in most developed countries. This explains the raise of ICTs and their rapid spread in the whole economic system. Historically however, ICTs were primarily used to support internal (hierarchical) coordination, while, as pointed out in Jonscher (1994), the bulk of coordination activities is dedicated to market coordination. That is why the development of new means of coordination that can support exchanges among firms, and transactions between producers and the final customers represents potentially tremendous productivity gains.

Recently, the rise of the Internet struck analysts, decision-makers and public opinion. Indeed, while corporations have been using inter-firm data networks (since the mid 1970's), and the telephone, the fax and a wide set of other technologies (for several decades), to support inter-firm coordination and market oriented activities, the Internet provides a support for worldwide multi-media communication that can potentially support a wide range of information exchanges. This is why since the mid-90's the notion of e-commerce has been becoming an essential issue for many public and private decision-makers.

ICTs in general, and especially the Internet, are thus supposed to bring about major productivity gains in market coordination. Several (complementary) arguments are put forward:

- ICTs will enable a decrease in distribution costs by allowing a more efficient management of resources (e.g. US Department of Commerce (1998), OECD (1997-1999));
- ICTs will make the market more transparent, leading to the ousting of inefficient suppliers and intermediaries. Thanks to information networks like the Internet and smart technologies, consumers will be able to search among thousands of merchants for the lowest prices, thereby increasing the downward pressure on prices and leading to a shift in market power from producer to consumer (e.g. Hagel and Armstrong (1997), Yardini (1996), Crane, (1997));
- ICTs will enable customers to bypass commercial intermediaries because they will be able to get in touch with the suppliers directly, and vice versa. Actual markets will thus replace networks of intermediaries, as has happened at the London Stock Exchange or the Swiss Electronic Exchange when electronic commodity and stock exchanges squeezed some intermediaries out of the trade (Zwass (1999)). Short distribution networks will enable major savings in (supposedly useless) labor costs and rent captures (e.g. Benjamin & Wigand, 1995)³.

As reported by Brynjolfson & Smith (1999), these arguments are today widely accepted. The Internet is supposed to bring us a frictionless and intermediary-less economy, based on a ubiquitous information network that will support the performing of an almost perfect Walrasian market. A strong hiatus remains however between this assumption and the actual reality in e-commerce. When one documents what is really happening today, the stylized facts that emerge provide us with a contrasted vision of what is really happening with the raise of e-commerce.

- Full electronization of the market is and will remain not the rule, but the exception. On the one hand, despite years of experience and strong growth, e-commerce is and will remain for a long time a marginal way to market products and services. On the other hand, most of the so-called electronic transactions are only partially electronized. Price negotiation, payments and deliveries are often performed offline (Cf. OECD (1997a), Dang N'guyen (1999), Brousseau (1999)). "Brick and Mortar" and "Click and Mortar" seem to successfully sustain the competition of the "Click and Deliver" Model.
- e-commerce does not suppress commercial intermediation, especially on the B-to-C segment where the vast majority of exchanges is still performed through traditional commercial networks and where the Internet retailers are most of the time major players in traditional distribution (OECD (1997), Brousseau (1999))⁴.
- e-commerce does not systematically mean frictionless markets. Indeed, e-commerce is often used to discriminate between consumers and search costs are not negligible on the electronic networks (Cf. Bailey (1998), Degeratu, Rangaswamy, and Wu (1998), Shankar, Rangaswamy, and Pusateri (1998), Lee (1997), Clemons, Hitt and Hann (1998), Brynjolfson & Smith (1999), Sandström (2000), Friberg & alii (2000)).

The remaining sections of this paper will be dedicated to the interpretation of these facts. Indeed, in my opinion they refute the traditional assumptions about Internet supported commerce, i.e. that the Internet will support a fully electronic market that will directly link producers and final consumers. There are at least two reasons why this will not happen:

- There are technical and strategic barriers to the full digitization of transactions. On the one hand, technical means do not solve all the information exchanges problems that can be solved

when transacting parties meet, and when potential consumers can be put in physical presence with the transacted commodity (or the service provider). On the other hand, for strategic reasons, suppliers and consumers do not have any interest in displaying all their private information on electronic networks.

- Commercial intermediaries provide transacting parties with services that bring transaction costs down. Digital network and/or information service providers are not automatically able to provide similar services.

In this paper, we will focus on this second explanation. This will lead to concentrate on the analysis of the B-to-C relationship. Indeed, in these relationships at least one party is unskilled and cannot invest in a specific technical system, and there are systematically a very large number of players. This is why exchanges are often mediated. On the other hand, in the B-to-B segment, transactions occur among specialized parties that can dedicate a lot of means and attention to the management of their exchanges, and that play on a small number markets. Disintermediated exchange is more frequent. This is also because transactions are often specific.

3. The Economic Role of Commercial Intermediaries

The core argument of this paper is that electronic intermediation will not become a substitute for commercial intermediation. The opposite popular thesis relies on the assumption that intermediaries exist because of information asymmetries among producers and final consumers. Intermediaries are needed because the former do not know what the quantities, features and schedules of the latter's consumption plans are, and vice versa (consumers do not know the producers' production constraints). According to that line of analysis, intermediaries are assumed to play two roles:

- A purely information role whereby intermediaries are perceived as entities gathering, sorting and arranging information about both parties' plans in order to match them. The fact that they are partners in the exchanges is purely incidental. It is a way to be remunerated by taking a commercial margin. Since they act as brokers, they should and could be remunerated by a fee.
- An economic matching role in which one considers that intermediaries do not have the ability to perfectly match producers' and consumers' plans. They consequently hold inventories and perform other logistic functions in order to match these plans in a universe where perfect matching is impossible. They therefore have to bear risks. That is why they are partners in the exchanges.

In both cases, providing the customers and the producers with efficient means of information will enable them to spontaneously match their plans and will transform commercial intermediaries into useless third parties.

This would be true if the “governance” (Williamson (1996)) of the “macro-transaction”⁵ linking producers and consumers was just a problem of matching both parties' plans (which remains however a huge optimization problem when there are millions of parties). However, in addition

to those problems one can mention two other essential sets of coordination difficulties among parties:

- First, information asymmetries cannot be reduced to asymmetries among plans. In a decentralized economy, players do not know the same things, and know that they can draw profit from these asymmetries. This leads to the well known adverse selection and moral hazard problems, linked to the difficulty in assessing the actual return one will get in the exchange, and to the difficulty in evaluating the level of the return the other will accept to give. Moreover, there are many enforcement problems linked to these information asymmetries since enforcement mechanisms are also bound by information and knowledge asymmetries (resulting in unverifiability constraints).
- Second, incompatibility problems could prevent market clearing. Indeed consumers and producers plans can be incompatible because of disadjusted timing among them. For instance, many of our consumption decisions are instantaneous and impulsive, while most goods and services need time to be produced and bring to the final consumer. Production plans have to be made before consumers' plans. This can generate over-production or shortage in supply. To the opposite consumers ability to transform their demand into purchases depends upon their solvency. Liquidity constraints can prevent them to absorb the output of the productive system. In a monetary economy, this miss-match among plans is qualified as agents' liquidity constraint. This constrain can prevent both side of the market to trade the efficient level of goods or services preventing markets to clear.

When one considers these two aspects of the coordination difficulties among producers and final consumers one gets a different picture of the role of commercial intermediaries in a market

economy. Obviously, intermediaries make it possible to coordinate plans by managing information, but they also perform other economic functions such as market liquidity management (market clearing), securing exchanges, managing the logistics of exchanges. Such an analysis provides us with a different picture of the impact of the development of information networks. Indeed, there are only partial substitution possibilities between electronic information management capabilities and commercial intermediaries.

Let us sum up the four coordination problems faced by agents in an economy where millions of consumers and producers have to bring the output of producers in the hand of the final consumers. The governance of the resulting macro-transactions generate four coordination needs:

- Information management: customers and suppliers plans have to be matched
- Logistic matching : since agents' plans do not spontaneously match in time and space, goods and services have to be stored and moved.
- Information asymmetries solving: adverse selection, moral hazard and enforcement problems arise because agents get the possibility to hide the features of the transacted goods and services. This enables them to provide their counter-part with compensations that are inferior to what was initially promised.
- Economic matching : in a monetary and production economy optimal plans are not spontaneously fulfilled because agents needs liquidity to carry out their plans. Markets do not clear spontaneously and reached markets equilibria can be sub-optimal.

Along this line, commercial intermediaries ensure the adjustments (in terms of volume, quality, availability, etc.) among producers and consumers, but they also secure the transaction, ensure the market liquidity, (etc.) by taking charge of four functions

- **Information Management:** by constituting a single counter between producers and consumers, and by compiling and filtering information, they *de facto* simplify the producer's problems of acquiring information about the demand, and the consumer's problem of being informed of the supply structure and capabilities. Intermediaries can obtain wide economies of scale, scope and specialization in the performing of that function.
- **Logistics Management:** by specializing in the sorting, packaging, transportation, and stocking of goods they enable both sides to benefit from economies of scale, scope and specialization in the difficult task of conveying goods from their production sites to their consumption sites (or delivering services) in a timely manner.
- **Transaction Securization:** by controlling (and guaranteeing) the quality of products delivered to consumers and by guaranteeing payment to the producers, commercial networks enable both sides to overcome the adverse selection and moral hazard problems that characterize any transaction.
- **Insurance and Liquidity:** By buying the products from the suppliers before they reach the final consumer (often as soon as they are manufactured) and by lending money if need be to the consumer, intermediaries are guaranteeing systematic market clearing despite both sides' liquidity constraints. Moreover, by buying the production before consumers expressed their needs and by guaranteeing the final consumer that he will get the goods whatever happens on the supply side, intermediaries play an insurance role. Indeed, thanks to their knowledge

about both sides of the market and their relationship to these sides, they are able to assume the commercial risk in place of the producer and to provide the consumer (respectively, the supplier) with an inbound (outflow) guarantee of having the goods delivered (to dispose of its production).

To get a better understanding of how digital technologies could impact on the governance of the "macro-transaction between the suppliers and the final consumers, and therefore on the role of commercial intermediaries, it is essential to get a better understanding of the economics of commercial intermediation. At least two questions can be raised:

- How commercial intermediaries are able to impact on the level of transaction costs (or, put another way, why do they benefit from a cost advantage when compared to the direct management of intermediation by consumers and suppliers... or by intermediaries that are not commercial intermediaries ? This call for a better understanding of the economics of commercial intermediation (§ 4)
- To what extent can commercial intermediaries be substituted for information networks ? This calls for an in depth analysis of the possible ways along which digitized network or information service providers could provide economic agents with services that would enable them to bypass commercial intermediation (5)

4. The Economics of Commercial Intermediation

What is the economics of commercial intermediation? This question is both quite simple to answer, and difficult to document. Indeed, while it accounts for 15 percent of the US GDP (Spulber (1996)) and a significant part of employment (as mentioned in note 3), commercial

intermediation has not captured the attention of economists. The existing literature is primarily concerned with financial intermediation, and its central focus is on providing portfolio diversification to traders (Cf. Lewis (1995)). Only a few contributions are dedicated to the analysis of intermediation for goods and services (e.g. Hackett (1992), Betancourt & Gautschi (1993), Michael (1994), Spulber (1996), etc.). Moreover, figures, facts and applied studies are all quite scarce. Following Spulber (1996) as well as other contributions one can however point out the economic advantages of intermediated exchanges. It relies on four main characteristics of commercial intermediation

- First, commercial intermediaries provide the four above quoted intermediation services on a bundled basis. This enables them to benefit from economies of scope. This also impacts on their incentives to provide those services efficiently (§ 41)
- Second, by centralizing market operations, commercial intermediaries benefit from scale and scope economies, are able to pool risks, and can cross-subsidize or rearrange transactions to ensure market clearing (§ 42)
- Third, by investing in specific assets, especially knowledge and "commercial relationships", intermediaries are able to perform more efficiently intermediation functions (§ 43)
- Fourth, by providing cash to the players, intermediaries reinforce their ability to provide them with the insurance and market clearing services they need (§ 44).

41. Bundled Transactional Services

Bundling the four basic services required to match supply and demand is precisely what differentiates commercial intermediaries from other intermediaries, like infomediaries or logistic companies. Bundling enables to provide the set of these services at a lower cost.

First, while different, these tasks are interdependent in the sense that the way each of them is managed impacts on the costs borne by the commercial intermediary to perform the others. For example, there is arbitration between information costs and logistic management costs. Michael (1994) documents this when he compares the relative efficiency of mail order companies vs. retail stores in the 1910-1940 period. He points out that the former bore less information costs since they did not provide their customers with an extensive information service about their products, while this was the case of retailers, that had to dedicate time to help their customers to choose and get a better idea of the products' features. However, mail order companies suffered from a larger return of goods than retail stores. That is why information and logistic services are usually bundled when provided by commercial intermediaries. The economic role of commercial intermediaries and marketing chains is precisely to define business models and implement them through networks of intermediaries in order to provide consumers and producers with a set of intermediation services that will enable them to transact at the lowest possible cost⁶.

Second, the bundling of those services is precisely what differentiates commercial intermediaries from simple brokers. Hackett (1992) and Spulber (1996), while using different terminologies, also insist on the importance of differentiating those agents that purchase and resell goods — our "commercial intermediaries" qualified as "merchants" by Hackett (1992), and "marketers" by Spulber — from those that facilitate exchanges without buying and selling goods. The former — including retailers, wholesalers and banks, second-hand dealers, energy marketers, etc. — are compensated with the residual surplus of the operation they manage, while the latter — including

travel agents, real estate agents, insurance agents and stockbrokers — are remunerated with a revenue-sharing commission. Both authors insist on the idea that, because these two types of intermediary differ both in the way they hold property rights and in their remuneration principle, they do not play the same role in market clearing. First, since they bear risks and are remunerated by the residual surplus, commercial intermediaries are better incited to provide the required quality of additional services than that provided by brokers. This is essential when those additional services have an influence on the level of demand (Hackett (1994)). Second, as pointed out by Spulber (1996), commercial intermediaries can decide to tax or subsidize transactions among the producer and the final consumers in order to get a better match among their plans. This is essential when these plans do not easily match because the production process is difficult to control or because the demand is evolving randomly. In addition, we think that the bundling of information, logistic, transaction securization, insurance and liquidity services is also an essential difference since it has a "single counter" effect that decreases producers' and consumers' transaction costs and enables commercial intermediaries to benefit from economies of scope. Betancourt & Gautschi (1993) also take the bundling of services to be an essential feature of commercial intermediaries, explaining both their existence and the nature of their remuneration. Since they face a bundled service supply, consumers cannot choose among each of these services. This enables the distribution firm to price the various services independently of their costs. Cross subsidies among products and consumers can have positive welfare effects in some circumstances. For at least these three reasons, commercial intermediaries must not be confused with information brokers.

42. Centralization of market operations

This notion has to be understood in two ways. First intermediaries are a single counter among many consumers and several suppliers. Second, intermediaries intervene in transactions concerning different sets of goods and services. These have five main effects:

- Economies of scale in transacting: when there are millions of potential partners, it is less costly to concentrate relationships among them through a central agent. A single counter decreases search, negotiation and implementation costs. Moreover, the single counter facilitates the setting of a single market-clearing price (Spulber (1996)).
- Economies of scope: since there are often many redundancies among transactions, the ability to group transactions (e.g. the ability for a buyer to simultaneously purchase a set of goods, rather than buying them separately) enables the sharing of fixed transaction costs among several transactions.
- Cross-subsidization among transactors and among transacted goods. As pointed out above, since it is a central point in a set of transactions, the merchant can favor matching among supply and demand by cross-subsidizing transactions in order to play on the various consumers' willingness to pay and suppliers' opportunity costs. When there are information asymmetries and search costs, cross-subsidization of transactions can increase welfare because it enables traders to save costs and to improve the chances that trade will take place (Myerson & Satterthwaite (1983), Spulber (1988, 1996), Mookherjee & Reichelstein (1992)).
- Risk-pooling. Intermediaries try to reduce market uncertainty by holding inventories. Inventories enable them to guarantee suppliers (respectively consumers) with a guarantee that their output will be taken away (respectively delivered). In order to protect themselves

against the risk of holding inventories, retailers diversify by purchasing and reselling a variety of products. They thus pool suppliers' risk (Lim (1981)).

- **Rearrangement:** when producers' and consumers' wants do not spontaneously match, the central agent can try to match them by rearranging the provided set of goods and services in order to tailor them better to the demand. Indeed consumers are seeking for features, not goods. By being able to rearrange the output of the productive system, commercial intermediaries can try to match producers' constraints to consumers' needs when they do not immediately fit. This is the role of financial intermediaries recognized by the literature (Cf. Lewis (1995)).

The potential of going through a single central agent is obviously bounded by this agent's ability to manage complexity. Bounded rationality therefore limits the ability to completely centralize exchanges and explain the existence of numerous commercial intermediaries. In addition, the limited ability to concentrate resources in the hands of a small set of economic agents is another reason for the existence of several intermediaries. Indeed, intermediation necessitates being able to advance financial resources and to move goods and services across time and space.

43. Investment in specific assets

When transactions require investments in specific assets to be efficiently performed, specialized intermediaries have the possibility and the incentives to invest because consolidating transactions through intermediaries make these investments profitable, which is not always the case when direct trade occurs. This enhances efficiency because those investments negatively affect transaction costs, and because, everything remaining equal, the efficient level of investment is

more often reached (especially because for a part of these investments there are increasing returns to scale). Four types of investments are performed:

- Investment in transactional knowledge:

In a non-Walrasian world, consumers do not know the features of the good supplied and producers do not know consumer needs. Discovering this information is costly, but generates strong economies of scale because many consumers and producers can use it. Because they are central in the market, commercial intermediaries benefit from some cost advantages in producing this information. For instance, large super-market chains are seriously challenging today the marketing survey providers because, thanks to the tracking of bills and payments, they have a very good knowledge of their consumers' behavior. However, their central position also enables them to spread this information both to customers and to providers in the form of advice, requirements, behavior channeling, etc.

As far as adverse selection and moral hazard are concerned, intermediaries are incited to dedicate means to the identification of their clients' and suppliers' characteristics. Since they are residual claimants (because they hold property rights), they will bear the consequences of insufficient efforts to reduce the associated risks (Diamond (1984)). This is an argument that is parallel to that made by Alchian & Demsetz (1972) about the advantages of central monitoring. Second, as pointed out by Biglaiser (1993), commercial intermediaries trade higher volumes than individual traders do. They therefore have stronger incentives to learn. Third, commercial intermediaries can learn faster and more efficiently because they have a greater propensity than individual traders to repeat the trading game with each trader.

In sum, commercial intermediaries have both strong incentives and the ability to generate economies of learning that enable them both to more efficiently match demand and supply and to reduce the negative consequences of opportunism.

- Investment in mutual trust: intermediaries have a strong interest in investing in mutual trust with each of their partners. Indeed, it enables them to perform their intermediation task better. On the one hand, by establishing a repeated relationship with a buyer (respectively a supplier) they decrease information and enforcement costs (repeated game), while they secure their outbound flows and increase their ability to discriminate. This will be of some interest for the suppliers (respectively buyers). On the other hand, this will provide the customer (respectively the supplier) with a supply (respectively a demand) tailored to its needs, and a kind of implicit assurance of delivery despite contingencies (respectively an insurance to dispose of its output).
- Investment in a reputation for fairness and efficiency: intermediaries have greater incentives than individual traders to invest in reputation. First, since they are central in the market, the probability of re-transacting with each trader is greater than the probability of re-contracting between two individual traders. Second, since intermediaries handle the products of more than one supplier, their incentives to sell a lower quality good differ from that of individual suppliers. Indeed, the selling of a low quality product will generate a loss of reputation for all the other products traded (Biglaiser & Friedman (1994)). Third, investing in reputation — especially through the development of a brand name — is an essential means of securing investment in learning. Indeed, Intellectual Property Rights do not protect the types of investment that are performed by commercial intermediaries to provide both parties with efficient trading services. There are therefore positive externalities between the incentives to

invest in knowledge (and organization) and the incentives to invest in building a commercial reputation⁷.

- Investment in physical assets: when it is necessary to invest in specific means to transport, stock and distribute goods and services, commercial intermediaries can benefit from economies of scale and scope. By studying the evolution of distribution costs in the US from 1910 to 1940, Michael (1994) was able to show how commercial intermediaries optimized their means of distribution to decrease these costs as the spatial distribution of the population changed.

44. Providing Liquidity

As industrial investors enable the financing of the production cycle, commercial intermediaries finance the distribution cycle. This avoids the problem of double wants, in which a buyer and a seller need to want and to be able to transact at the same time. As pointed out by Spulber (1996), this helps to clear markets, smooth the patterns of demand and supply fluctuations and reduce the risks of exchange. As pointed out by Clower & Leijonhufvud (1975), the problem of double coincidence exists as soon as there are fixed transaction costs that incite traders to transact only from time to time. The synergetic management of the various functions quoted above, enables commercial intermediaries to finance the distribution cycle at a lower cost than financial companies will be able to do.

Let us now analyze how ICTs affect the economics of commercial intermediation.

5. Can Electronic Networks Bypass Commercial Intermediaries ?

Can information technologies enable traders to potentially bypass the services provided by commercial intermediaries in order to establish direct links among them ? To answer this question, it is useful to assess what are the key resources to manage each of the four functions we identified as the essential services provided by commercial intermediaries (information, logistic, security, insurance and liquidity), and to analyze how electronic networks can impact on them. We will point out that, except for information management, the value added by commercial intermediaries relies on assets that cannot be substituted by electronic networks. We will even argue that intermediaries are useful and efficient in performing information tasks. This will lead us to point out that commercial intermediaries will not be replaced by information networks, while these networks will probably enable them to perform their tasks more efficiently. However, the economics of the various intermediation services could evolve with the spread and the development of ICTs. This can affect the optimal bundling of services for some categories of transacted goods or services, leading to a re-engineering of the distribution channels in some specific niches (Cf. § 62).

51. Information Networks and Information Management

The ability of commercial intermediaries to efficiently manage information is primarily due to their central position in the transaction chain between suppliers and customers. Indeed, it enables them to be directly "connected" to these various information providers and seekers. Moreover, because they manage long term commercial relationships with them, they benefit from privileged access to private information. Indeed, they benefit not only from learning effects, but also from the positive externalities of mutual trust.

It is clear that a universal, low cost and “intelligent” network like the Internet can enable both the producers and the sellers to bypass the information services provided by commercial intermediaries. Indeed, Internet decreases search costs both through its universality and its ability to support the use of automated search means (e.g. search engines)⁸. This is however true only for the information that both parties agree to reveal. Private information — such as consumers' willingness to pay or producers' reservation prices — will not be displayed on the network, whereas a commercial intermediary is often able to extract it through its commercial relationships. In fact, bypass possibilities will strongly depend upon the essential features of markets and goods. If the traded goods and services are easily describable, and if no market player is able to prevent the formation of an electronic market place⁹, it will be possible for traders to automate information searches and reply to requests to quote. In this case, the combination of competition and benchmarking will force both sides of the market to reveal information.

Whether electronic networks are able to favor disintermediation of information tasks deserves greater attention however. Indeed, as mentioned in previous studies (e.g. Brousseau (1993, 1999)), reduced communication and processing capability costs do not mean zero information costs. Hagel & Singer (1999) point out that intermediaries would be necessary even for the information market in order to file information efficiently, bear and decrease search costs (thanks to economies of scale) and to protect the privacy of cyber-consumers. Avery, Resnick & Zeckhauser (1995) make a similar point: "The information superhighway brings together millions of individuals who could exchange information with one another. Any conception of a traditional market for making beneficial exchanges, such as an agricultural market or trading pit, or any system where individuals respond to posted prices on a computer screen is woefully inadequate

for the extremely large number of often complex trades that will be required. Electronic brokers will be required to permit even a reasonably efficient level and pattern of exchanges. Their ability to handle complex, albeit mechanical, transactions, to process millions of bits of information per second, and to act in a demonstrably even-handed fashion will be critical as this information market develops."

Similarly, Zwass (1999), the French Taksforce for Electronic Commerce (<http://www.finances.gouv.fr/>), and the US Department of Commerce (1999) document the emergence of these new types of electronic intermediaries (so-called cybermediaries or infomediaries) that become valuable by facilitating product search, evaluation, and distribution. In fact, most of the existing so-called internet merchants are only information brokers which are able to create businesses by reducing search costs in industry-specific segments. Realbid has created a site (<http://www.realbid.com>) that brings together the buyers and sellers of commercial real estate. The firm's offering consists in removing the need for the buyer to study multiple long proposals to find likely purchase candidates (Cf Zwass (1999)). In another industry, Cattle Offerings Worldwide posts on its site the pedigree and genetic traits of cattle embryos and lets cattle buyers bid on them (Zwass (1999)). Industry segments with widely dispersed sellers and buyers, and offerings that lend themselves to simplification with a searchable database are promising targets for this intermediation.

When one takes into account marketing strategies, there are other reasons to maintain intermediaries. Indeed, they can protect privacy of information by hiding the identity of traders. Indeed, in the case of discounted travel for instance (e.g. Degriftour¹⁰) vendors do not want to reveal their discriminating behavior. That is why, in practice, they often sell under various trademarks and through different marketing channels. This is the same for consumers who do not

want to be too tightly targeted by product and service providers according to their willingness to pay. Going through a third party that guarantees "anonymity" is another "information" service that requires an intermediary.

In sum, while commercial intermediaries' information tasks are potentially the functions that are the most challenged by the ability of ICTs and digital networks, there are a number of reasons that suggest that intermediaries will continue to be useful in handling information between the supply side and the demand side. Moreover, it has to be taken into account that ICTs can be used by commercial intermediaries to increase their efficiency in providing traders with efficient information handling services. In particular, there are several evidences pointing out that commercial intermediaries become able to manage marketing databases that enable them to be even more efficient in performing information management. Thanks to the tracking and matching capabilities of ICTs (and to their central position in the market), they become able to know customers behaviors in more details and on a customized basis. It enables them to provide suppliers with richer information about the demand side, and with a more efficient matching service¹¹. Consumers benefit of customized services. While these services reduce the maladaptation costs they bear, they enable commercial intermediaries to discriminate them (Gensollen (2001)), resulting in a complex welfare effect.

52. Logistic Management and Electronic Intermediation

The logistic services provided by commercial intermediaries rely both on logistic assets (transportation means, grouping and ungrouping platforms, storage capabilities) and upon their ability to manage them. This latter largely depends today upon the mastering of an efficient information network. It has to be pointed out that the set of logistic assets has to be tightly

tailored to the characteristics of the goods distributed and to the features of the traders, especially their spatial distribution. As pointed out by Michael (1994) in his study on the competition between marketing channels at the beginning of the century, mail order firms developed retail stores in urban areas, because in those areas there were strong cost advantages to sell through retail stores rather than to sell through mail order (which was more competitive only in rural areas). This is how Sears and Ward's, that were primarily mail order firms, became major players in retail distribution. A similar phenomenon has occurred in France over the last 15 years with mail order firms like La Redoute or Les 3 Suisses. Moreover, they have also developed new delivery techniques to try to benefit from economies of scale. They have provided customers with a next day delivery service that is available only if customers agree to withdraw the ordered goods at a "delivery point". Since the delivery otherwise requires a one to three week delay, most customers in urban areas are incited to agree to be delivered elsewhere than at home. This has enabled mail order firms to concentrate their logistic flows and therefore to considerably reduce their costs. They have thus stayed competitive with retail stores. These two examples point out that the efficient management of logistic assets is a major service provided by commercial intermediaries. This is even clearer when one speaks of goods with specific characteristics (such as size, fragility, perishability, etc.), that require specific handling, storage or transportation operations.

What can smart networks change in the management of logistic operations ? On the one hand, it is clear that ICTs enable a more efficient management of networks of logistic assets. For the last 30 years, the ability to move goods faster and cheaper has been being largely linked to the ability to optimize the management of logistic means through the use of data networks which enable logistic companies to deploy their means preventively, to assess the actual state of the system just

in time, and to reoptimize the allocation of means permanently. On the other hand, it is not clear whether this trend will lead to an ability to bypass the logistic services provided by commercial intermediaries. In the professional think tank, it is often argued that customers and producers will be able to directly coordinate with logistic subcontractors to directly ship goods between them. What will be lost in term of efficiency (because the logistic capabilities will no longer be tailored to the specificity of the goods or of the population), will be saved thanks to a higher rate of use of non-specific capabilities. Moreover, it is often argued that less physical capabilities will be needed and that this type of distribution process will be less resource consuming (Cf. § 2). These are however, speculations and the facts seem to contradict such an optimistic vision. Indeed, the existing distribution services on the Internet do not prove that they will be able to sustain competition from traditional retailers. Obviously, they will be able to serve some niches. It is not sure however that the logistically-disintermediated model of sales is a viable way to support the bulk of B-to-C commerce. Let us quote two examples: books and electric appliance distribution.

The famous Amazon.com¹² has no physical store infrastructure. Rent and depreciation represent less than 4 percent of Amazon's sales compared to 13 percent for the traditional retailer, and its labor costs are lower as a percentage of sales. Amazon has less capital tied up in inventory: its books turn 20-40 times per year versus two to two-and-a-half times per year for the traditional retailer. This should give a very strong cost advantage to this company as compared to retailers. However, Amazon's advertising and marketing costs have been high relative to its sales volume. This is partly due to the high cost of penetrating a new market. Nevertheless, this is also a structural problem since on-line sellers have to permanently remind their customers that they should visit their site. This is for instance a well-known characteristic of the service providers on the Minitel system in France where advertising expenditures represent a significant share of

costs. Mail order companies also bear significant advertising and marketing costs (Cf. Michael (1994)). This led Amazon.com to sell its books at a relatively high price. Despite these high prices, Amazon's gross margin (retail sales minus cost of goods sold) was 19.5 percent of retail sales compared to 36.7 percent for traditional retailers. This was also partly due to the fact that traditional retailers purchase their books from publishers and benefit from discounts due to their large sales volume, while up until 1997, Amazon purchased its books almost exclusively from wholesalers, paying markups the traditional retailer largely avoids. Amazon had to follow another strategy when the traditional retailers entered the Internet business.

Indeed, by 1997, Barnes & Noble, a major book distributor in the US, had developed its own Web site to compete with Amazon. Since they were able both to optimize logistic operations and purchasing policy, Barnes & Noble were able to propose lower prices. This quickly led Amazon to align its prices (see figure 2)

Figure 1: Amazon.com vs Barnes and Noble Pricing Policies

(around here)

This led Amazon.com to switch to another business model. Indeed, at the beginning of its story, Amazon was more an information broker than a commercial intermediary. It ordered books on demand from dealers. When it had to face the competition of actual intermediaries, they were obliged to purchase large quantities from publishers, to hold stocks and to optimize logistic operations. Barnes & Nobles continue to benefit from a strong cost advantage because they are able to avoid the costs of delivering all their products directly to the customers. Their Web site is an additional display case, but they can incite their customers to go to their shops to get delivery from their on-line orders. This is an important cost advantage since home delivery represents 8 percent of the price of the delivered goods.¹³. While, the Barnes & Noble vs. Amazon.com saga

has only begun, one can expect that thanks to its costs advantage, Barnes & Noble is likely to prevail as price leader. Amazon will have to choose between staying a broker that will dominate some niches on which large retail distributors do not have any competitive advantage (e.g. rare books, academic books and books delivered abroad), or become a retail distributor as was the case for mail order firms in the US at the beginning of this century (Cf. Michael (1994))¹⁴.

Another case illustrates the efficiency of traditional retail intermediation. Marcopoly is a French startup that tries to market consumer electronics and domestic appliances¹⁵. The viability of its business model is in question. Like Amazon.com, it cannot sustain price competition against well-established large specialized distributors that benefit from low purchasing prices from manufacturers because of the large volume they sell. Consequently, Marcopoly tries to provide customers with a larger range of choice. Indeed, large suppliers concentrate sales on a restricted range of products so as to benefit from economies of scale in terms of logistics and bargaining. They thus display only a part of the available products in order to channel consumer choices¹⁶. Marcopoly's strategy faces two problems. First, Marcopoly is unable to provide its clients with a guarantee of timely deliveries. Indeed, it cannot hold inventories because it would be economically incompatible with the logic of customized sales that lead to sell small amounts of a very broad range of items. It therefore purchases on demand small quantities from the manufacturers, which therefore do not want to guarantee Marcopoly any commercial advantages like delivery guarantee (and obviously rebates). Second, Marcopoly cannot provide its customers with competitive prices because, as pointed out above, they do not benefit from any rebates for large volumes. Moreover, since they do not benefit from any economies of scale in logistics because they ship only small volumes on a delivery to delivery basis, they have to face huge logistics costs (up to 15 percent of their sales) because logistics subcontractors do not grant them

reductions. One of the questions raised by this example is whether this is a path dependent fact or an efficiency fact. A partial answer is given by field studies performed in France on on-line purchasing. Consumers seem to have contrasted preferences when they buy on-line or in supermarkets. On-line retailing is associated to the ability to benefit from a wide range of substitutable products in order to get quasi-customized items. On-line retailers are therefore obliged to provide a very wide range of choices. In the case of French supermarket chains, it obliged them to reorganize their supplying policy. In several cases, the on-line subsidiary of the chain became independent from the group... and lost a part of the advantages (rebates, inbound guarantee, logistic costs, etc.) tied to large scale orders (Licoppe (2001)).

Mentioning the case of French Supermarket chains lead to quote a third set of empirical evidences. In France in the year 2000, on-line supermarkets generated \square 61 millions sales to be compared to \square 137 billions sales of the supermarkets. This is the equivalent to the activity of 10 over 9000 supermarkets. The average basket bought in on-line supermarkets range from \square 110 (Telemarket) to \square 145 (Houra), while delivery costs range from \square 15 to \square 45 per basket, depending upon the scope and the complexity of the delivery area. The competitive pressure and the consumer willingness to pay prevent on-line supermarket to charge more than \square 7.5-10.5 for delivery¹⁷ (Source : *Le Monde* 4/04/2001). It is therefore easy to understand that the cost of the "last mile" is a major obstacle to the generalization of the "delivery at home" model. Those consumers, with a loose budget constraint and a harsh time constraint, will nevertheless be interested in time saving services provided by on-line merchant, because their opportunity costs when they shop in the real world is over the price that will be charged for those services. Our objective in displaying these figures, however, is not to wonder whether on line shopping will develop and to what extent, but to point out that traditional intermediaries provide customers

with efficient logistic services, even if this service is partly provided by the customer himself when he moves goods from the shop back to home.

Clearly these three examples can only be taken as suggestive; it would certainly be worthwhile to look at more cases. However, they don't suggest only that commercial intermediaries benefit in general from a competitive advantage in terms of logistics. Indeed, they clearly point out that concentrating the bulk of the distribution of tangible goods through retail stores generates logistics economies. This was documented by the above quoted history of the mail order industry in the US (Michael (1994)), where firms had to set up their own store networks in order to stay competitive in large density population areas. Moreover, industry specialists point out that today large manufacturers (such as Miele or Sony) are hesitating to launch their own Web sites to market their products since they identify that it could be harmful for distribution chains that will inevitably remain their partners. Indeed, these chains provide them with efficient logistic services (including after sales services), and they do not want to dedicate huge means to the management of the related problems.

To conclude, while innovation in the organization of logistics chains could decrease the costs associated with direct shipment from producers to customers, it is doubtful whether commercial intermediaries will lose their cost advantage in organizing the physical movement of goods and the delivery of services. Moreover, these intermediaries can rely on ICTs to increase the efficiency of their logistics operations.

53. Transaction Securization and Information Networks

The providing of transaction securization services by commercial intermediaries clearly depends upon their expertise, their reputation and their commercial relationships that enable them to

decrease the level of information asymmetries among traders and to benefit from means of enforcing formal and informal commitments (through the repetition and the bundling of transactions).

These can hardly be substituted by operations performed by electronic networks. One can obviously imagine databases and rating systems that will track information about transactions and partners in order to provide traders with a kind of rating of a given trader's "reputation" (willingness) to be fair and efficient. This kind of quotation however poses at least two problems. First, it is only information about the past, not about the future behavior of the trader. Put another way, this is not information whose credibility is high, because it is not associated with a credible threat of retaliation (other than a potential decrease in rating) if the trader is unfair or inefficient (while the commercial intermediary can and has strong incentives to really stop purchasing or delivering). Second, users do not have any guarantee about the quality and the incentive of the information producers. If this is a rating system, several questions arise: what is the rating method? What are the assessor's motivations? Is he honest and independent? etc. If it is a simple database system, the questions are: How can one use the information provided by the database? Is this information exhaustive and unbiased? etc. Put another way, the ability to track information more efficiently through networks like the Internet clearly increases market transparency and thus decreases the level of adverse selection and moral hazard problems. However it does not stop them since information costs are not annihilated (there are still huge costs to intelligently process information), and because much opportunistic behavior can arise off line. For instance, if the quality of the good delivered is below that promised, this will not be systematically detected through the information circulating on the Web. To conclude, commercial intermediaries will

continue to play an essential role in monitoring exchanges, even if network resources will potentially help them to perform this task better.

54. Insurance, Liquidity and Digital Networks

The providing of inbound and outflow insurance is due, first of all, to the specific knowledge of commercial intermediaries that are able to know both production and consumption opportunities. This is reinforced by their ability to require assistance (on a fair's fair basis) from their business partners. To avoid falls in deliveries, a merchant can ask for additional volume of deliveries. To decrease the volume of unsold goods, he can incite his clients to buy higher volumes than planned. His investments in commercial relationships are therefore of interest in providing this security to having the goods delivered or disposed of. Last but not least, its financial capabilities enable it to hold inventories.

Again, while networks could substitute for commercial intermediaries for the pure information aspect of the insurance function, they could hardly substitute for the other aspects. Electronic networks could however enable commercial intermediaries to widen their ability to get in touch with additional customers or providers.

Pure electronic intermediation will not be able to overcome traditional intermediation because commercial relationships and financial resources will continue to be essential to match supply and demand because on both sides wants do not automatically coincide.

The liquidity guarantee is provided by commercial intermediaries thanks to the same set of assets that inbound and outbound guarantees. This leads to a similar conclusion in terms of traders' ability to bypass commercial intermediaries thanks to network capabilities.

It is important to recognize the essential role of this liquidity service in our actual economies. Indeed, even if production cycles have been reduced in many industries and even if production capabilities are more flexible than in the past, production constraints are still far from instantaneity and total flexibility. Put another way, most of the time production has to be planned and launched long before customers express their wants. In the automotive industry, for instance, the production cycle is still several weeks (as any customer can experience when he orders a car with a special set of options). Moreover, since there are still strong economies of scale to produce large series of standardized cars (because of the costs of readjusting production lines), car manufacturers continue to plan their production on a yearly basis and use several marketing techniques to channel the demand according to the production requirements. This industry is therefore far from being organized according to the "production on demand" model. This explains why car dealers are required to order cars on a yearly basis, and to pay for them on delivery (long before they are sold to customers). Since the automotive industry is probably the one that has pushed the furthest towards "just-in-time", the idea that a direct connection between supply and demand will make it possible to suppress commercial intermediation because it will enable manufacturers to produce on demand, thus avoiding the associated inventories, risk and liquidity constraints, seems irrelevant.

* * *

Figure 2 sums up our argument. It points out that, except for information services, the possibility for traders to bypass the services provided by commercial intermediaries is reduced. Moreover, it should not be forgotten that one of the interesting features of commercial intermediaries for traders is that they provide these services on a bundling basis. It would probably be quite costly in terms of transaction costs to have to deal with several service providers (i.e. an information

service provider, one or several logistics companies, rating agencies, insurance companies and banks) to manage their transactions. Thus, many reasons seem to justify the maintaining of commercial intermediaries, instead of a complete disintermediation between producers and final consumers.

Figure 2: The Impact of Information Networks on the Functions of Commerce

(around here)

6. The Futures of Electronic Commerce

Does that mean that electronic commerce will not develop ? Does that mean that new intermediaries will not emerge ? Does that mean that no transactions will be performed on-line ? Certainly not. Our analysis of commercial intermediation lead to the idea that traditional commercial intermediaries will continue to play an essential role in the evolution of the B-to-C commerce and e-commerce (§ 61)? However, ICTs could generate an evolution of the relative costs of the various intermediation functions and of the costs/benefits to bundle them that could favor re-engineering of distribution channels (§ 62). Moreover, when one consider the markets for intangibles, it is clear that the raise of ICTs strongly challenge the usefulness of commercial intermediation (§ 63)

61. Commercial Networks in the e-Economy

In this paper we have tried to demonstrate that commercial intermediaries will continue to be useful in an information society, and therefore that the future of e-commerce must not be assimilated to a worldwide digital Walrasian market. Not only will commercial intermediaries continue to provide bundled transactional services to customers and producers, but also physical

locations will continue to remain essential. Indeed, face to face meetings will continue to be unavoidable to exchange non-codified information and knowledge, and to establish interpersonal relationships that are often of importance to solve transactional problems (informal commitments, trust, etc.). Moreover, a customer's ability to physically access goods is essential to assess them. It is also essential for the vendor, because he can simplify and optimize its logistic operations. This explains why traditional wholesalers and retailers will continue to play an essential role in the information society (Brousseau (1999))¹⁸

However, this does not mean that they will continue to perform as in the past. Digital networks are an essential tool to re-engineer their processes in order to become more efficient (or at least to survive in the competitive race). For the last 25 years, ICTs have already made it possible to reengineer marketing channels. They have made it possible to considerably accelerate the speed of the flows of goods within distribution networks, contributing to significant progress in productivity. Moreover, they have made it possible to provide customers with many enhanced services. This trend will probably be reinforced with the rise of the Internet. It will first enable commercial intermediaries to better manage their own internal operations (optimization of logistics operations, cash management, information handling on supply and demand, etc.). It will secondly enable them to provide their customers with additional services that will be targeted both to add value to the service portfolio provided by intermediaries, and to discriminate between them more subtly (Gensollen (2001)). For instance, those customers who do not want to spend time gathering products in super-markets will be able to have their basket prepared and even home delivered (but supermarkets will continue to exist for those customers who will not want, or who will be unable, to afford for this type of labor intensive service). Zwafft (1999) quotes the interesting case of Marshall Industries, a distributor of electronic products. Its Website makes

software available that can be downloaded to the customer's site in order to design virtual chips that will work with the chips distributed by Marshall Industries. The software code describing the newly designed chips can in turn be uploaded to the distributor, who immediately burns the designs into prototypes that are mailed to the customer. By developing such a value-added service, the intermediary makes itself indispensable to both its suppliers and its customers. In addition, Web sites and cyber means will be a major support for advertising and marketing operations. The Internet has indeed the advantage of being a hybrid between a mass-distribution network (and therefore a mass-media broadcasting system), and a telecommunications network (that enables point-to-point customized and interactive communication). This makes it quite efficient to be used in targeting commercial communications.

The above arguments lead to the idea that traditional commercial intermediaries will play a major role in the development of e-commerce. As has been pointed out several time in this paper, many of the major player in that industry are not new entrants, but traditional commercial intermediary firms. This does not mean at all that new intermediaries will not be able to emerge. Some of them, like Amazon.com, seem to have already discovered relevant niches. However, since e-commerce will be essentially a set of services that will add features to the traditional marketing channels (rather than a totally new marketing channel), the firm that already controls those marketing channels will have a strong competitive advantage over new entrants. Indeed, they have the know-how, the reputation, the logistics capabilities, (etc.) to distribute products and services. In that respect, it seems that three types of players benefit from significant competitive advantages. All of them are essential players in actual distribution networks. Let us cite them according to their decreasing ability to play an essential role in e-Commerce:

- Supermarkets (and specialized distribution) chains benefit from logistics networks that are optimized according to the density of the population, well-known brand names and good knowledge of supply and their customers. Moreover, they have strong financial capabilities thanks to their ability to be paid in cash and to pay their suppliers on credit.
- Mail Order Companies generally have unique experience in at-a-distance selling and a trademark to do it. Moreover, they have also optimized logistics systems to ship goods to customers (Cf. the cases of La Redoute and Les 3 Suisses quoted above, Cf. § 52). They also maintain relationships with and have good knowledge of their customers who will probably be the most interested in buying on-line.
- Wholesalers master the backbone logistics networks and are those who hold the financial resources that finance the bulk of the distribution cycle. In France, the OCP that is one of the major pharmaceutical products wholesalers was able to easily respond to the competitive pressure of the new entrants that were relying on the Internet capabilities to penetrate the hospitals and drugstore market. Indeed, it easily developed in several months a service that makes its supply even more attractive than before. In the US, the famous McKesson company was able, long before the rise of the Internet, to become an essential service provider to the healthcare industry because its information network enabled it to provide industry members not only with an efficient delivery service, but also with marketing and management advice, and financial, (etc.) services (Clemons & Row (1988)).

Recent evolutions in the development of e-commerce based systems however incite us to be cautious about the ability of those established commercial networks to transform their potential competitive advantage into an actual one. Indeed, this will depend upon their ability to

reorganize. For instance, supermarkets cannot be considered as logistic platforms that would be optimized to favor an efficient service of at-home delivery. Consequently, supermarket chains have to reorganize their local logistic capabilities, and sometimes their procurement policy, in order to be able to deserve the niche market of at-home delivery of groceries. Moreover, at-home delivery is a specific task that will not be efficiently mastered by all the players (See § 52).

As compared to these commercial intermediaries, two other categories of player seem to benefit from less competitive advantages:

- Logistics companies will certainly be essential partners in the development of e-Commerce, as illustrated by the cases of UPS and Federal Express. However, it is not certain that they will be able to be anything other than subcontractors. Indeed, they do not have the commercial know-how to match consumers' demand and manufacturers' supply, they do not have a brand name associated to distribution services, etc. They could however benefit from some advantages in some niches. Moreover, they will definitely be included in many alliances, joint-ventures and other long-term relationships to develop specific services sustaining the development of e-commerce based services.
- Information service providers and information brokers will also be able to exploit some specific niches. It is more doubtful whether they will be able to compete with traditional distribution channels for the bulk of the future commerce. Several case studies cited in this paper — Amazon.com, Degri4tour, Marcopoly, etc. — seem at least to confirm this. Like logistics companies, information service providers will become essential partners in the development of e-commerce applications, but not their organizers. Indeed, they could provide on-line services facilitating transactions such as:

- Smart search tools in order to decrease traders' information costs. We however pointed out that the efficiency of such services is very much dependent of the traders' strategies (§ 51)
- Certification services: third party of confidence can authenticate information providers, guarantee the accuracy of the information broadcasted on the Web and ensure that information providers enforce specific rules. Information providers can develop such services. They will however be competing with traditional rating and certification companies that are often already well established thanks to their expertise and reputation.
- Assistance service to negotiate and conclude trading agreements. On line, services can indeed provide traders with useful information about average price, required contractual clauses, etc. to help them make efficient deals. This however make sense only when dealing with standardized products and services.
- Filing and other notarial services to ensure that the deal has been made and to support the settlement of conflicts.

In sum, digital networks will probably modify the organization of marketing channels. They will continue to be dominated by companies that are specialized in the providing of commercial intermediation services, but the corporations that will control these channels will probably be those companies that are already organized in networks and that can combine economies of scale with physical closeness to consumers. These companies will probably reinforce their competitive advantage as compared to independent retailers and small wholesalers¹⁹. While there will be exceptions, new entrants will probably remain partners of those dominant commercial intermediaries. While they master technical functions that are essential in the development of e-

commerce, they do not own the know-how, the network of commercial relationships, the reputation and the physical assets that are necessary to efficiently intermediate between supply and demand.

62. Products x Markets and the Cost Function of Intermediation

This will however depend upon the evolution of the cost function of the four functions we identified. Indeed ICTs could impact both upon the individual costs of each function, and upon the costs and benefits of bundling them (see § 41).

First, it has to be reminded that all these relative costs are probably quite different for various goods and services. Present commercial systems are quite contrasted when one considers the various types of goods and services transacted and the characteristics of the clientele²⁰. ICTs could generate contrasted effects on various distribution systems that do not bear the same kind of costs. Indeed on some market segments, specialized services providers could produce one or a set of the four intermediation functions by benefiting from a strong costs advantage due to a focussed and efficient use of ICTs. For instance, specialized information services providers could benefit from their ability to extract consumer information to provide them with customized services that they would produce by "assembling" on a customized basis a set of standardized components (*Mass-Customization*). Moreover, consumers' heterogeneity has to be considered as well. It is likely that many consumers value very much the total cost of having a product or services delivered to them. Nevertheless, there are for sure consumers that value even more the timeliness of delivery, the quality of advices, the after-sale service, etc. In these various respects, on line retailers could have the ability to provide differentiated services... as long as traditional retailers will not use digital networks to do the same (see § 61).

Second, with the raise of ICTs, the production function of the four intermediation functions could evolve in the sense that the level of economies of scope will decrease. Some of the example quoted in § 5 could support the idea that this can occur for specific product x market couples. If synergies decrease, the benefit of bundling these services would decrease and the economics of commercial intermediation would evolve. Especially it would become quite difficult for commercial intermediaries to continue to cross-subsidize those functions, if possible profitable entries exist for the separate providing of at least some of these functions.

Thirdly, it has to be recognized that all the existing distribution channels are not always efficiently organized. This generates opportunities of entry. Combined with the fact that new entrants could benefit from strong learning by doing effects, the possibility of sustainable entry of new entrants providing one or more intermediation services thanks to an efficient use of ICTs has to be recognized.

All of these phenomena could result in contrasted evolution paths in various industries resulting in contrasted e-commerce systems and diversified mode of intermediation. Especially, the possibility of unbundling the providing of intermediation services exists, at least in some specific niches. However, this is not the logic of disintermediation that prevails since markets will continue to be organized by intermediaries.

63. The Exception of Market for Intangibles

The logic of disintermediation characterizes, however, the market of intangibles. Indeed, goods and services that can be completely dematerialized do not require at all the same level of intermediation services. Indeed

- When these information goods and services do not have to be customized (i.e. when it is question of recorded music, general information or literature rather than consultancy services, R&D results, etc.), they can be produced instantaneously on demand. Indeed digitized information can be duplicated almost just in time and cheaply. Instantaneity of production suppresses the complex problems of the coincidence of double wants, and the providing of inbound-outflow insurance and liquidity services becomes useless;
- Intangibles can be moved at electron speed over digital networks at a quasi-zero cost. This suppresses most logistical requirements.
- If network service providers secure electronic communication (privacy, authentication, etc.) efficiently, the transmission of all the information regarding the transaction of intangibles will *de facto* secure transactions. Indeed, on condition that the Law²¹ be tailored to digital communication, the performing of the whole transaction over the network (meeting among traders, negotiation, agreement and actual exchange), will enable quasi-perfect verifiability. The securization traditionally performed by commercial intermediaries will become less useful.

This does not mean however that direct trade among producers and consumers will systematically occur. First, as pointed in § 51, "informediaries" could be helpful to handle the

huge quantity of information that will be exchanged. Second, ensuring on-line distribution requires a lot of expertise, and is submitted to economies of scale and scope. Indeed complex software systems have to be designed to ensure the providing of efficient and secured services. New intermediaries will therefore have some chance of emerging in these new markets to organize them. They will provide services based on the packaging and enhancement of information-based goods (Zwass (1999)). However, due to the removing of the time and spatial coordination of demand and supply, these intermediaries will not need to be merchants. They will act as brokers rather than as commercial intermediaries.

Two sets of fact seem to support these various assessments:

- First, actual e-commerce is essentially targeted toward information goods that can be easily turned into intangibles. As pointed out several times in this paper, while the on-line distribution of cars and wine is often reported by the press, the bulk of exchanges is due to information based goods: books, music and videos, travel and tickets, software (see Brousseau (2000b)). Since books and other printed material as well as music and video records can be easily dematerialized, there is little doubt that they will become massively distributed through on line systems in the next year... and that the exchanged goods on the Internet will primarily be such non-customized intangibles.
- Second, the most successful new intermediaries — e-Bay, Auto-by-Tel, Degriftour, etc. — are information brokers and not commercial intermediaries. Even Amazon.com claims to be an informational intermediary rather than a commercial intermediary (Leadership Online, Harvard Business School).

7. Concluding Remarks

While it is difficult to analyze the rise of e-commerce, because we are just at the beginning of its emergence, this paper is an attempt to assess how digital networks can support a re-engineering of the distribution networks. It is based both on an attempt to identify the relevant trends in the development of the Internet based systems, and on an analysis of past experiments of e-commerce on dedicated data-networks (Financial trading systems, Airlines' computerized reservation systems, Electronic data interchange networks, French Minitel-Teletel system, etc.).

Regarding the e-commerce issue, this paper points out that digital networks will not become the universal market place that will enable a disintermediated relationship among producers and final customers. Indeed traditional commercial intermediaries provide many other services in addition to information services. These services will continue to be essential for the exchange of all goods and services that are not completely intangible. Consequently, the rise of digital networks will essentially support a reorganization of existing marketing channels in favor of the large firms that already control dense and huge networks of commercial relationships and wide and efficient logistics systems. New types of intermediaries will however invade some market segments, and the traditional commercial intermediation will probably disappear for all the standardized information goods that can be dematerialized. However, information brokers will probably organize the resulting new information markets. Deeper analyses of the cost function of the intermediation services (in relation to the features of the "macro-transaction") have however to be performed in order to be able to propose more precise testable propositions on the evolution of the futures of economic commerce in various product x market segments.

From a theoretical point of view, this paper is an attempt to focus the attention of scholars on the economics of intermediation. For a long time, intermediation remained a sub-discipline of finance. Commercial intermediation deserves greater attention than it aroused in the past. To

better assess transaction costs in our economies, commercial intermediaries' activities have to be more precisely understood and studied (Cf. Wallis & North (1986)). Moreover, to better understand some essential issues, the way commercial intermediaries contribute to reduce transaction costs has to be analyzed. Indeed, "markets" and transactional systems are organized not only by institutions, but also by these particular economic agents. In the spirit of New-Institutional Economics, we pointed out the importance of property right allocation. The fact that commercial intermediaries hold property rights over the traded goods (as opposed to institutions and brokers) enables them to provide a set of bundled transaction services, which decreases the cost of transferring goods from producers to consumers in a decentralized economy. Unbundling those services will in many cases raise transaction costs, and limit the ability to provide those services to traders. This paper is however, a first attempt to analyze the economics of commercial intermediation. It is clear that our analysis has to be deepened both at the applied and theoretical levels.

¹The only reliable figures — those of the US Census Bureau of the Department of Commerce (2001) — point out that there was indeed a growth since the first measure (last quarter of 1999) to the end of the year 2000, where it reached 1,01 % of retail sales. However, the level and the pace of development of e-commerce, as the DoC computes them, are far below the forecasts of Consultant Firms (which figures were considered as facts by so many decision-makers and specialists). Moreover, on line retail sales decreased — both in volume and in share of total sales — in the first quarter of 2001, where it reached 0,91 % of total retail sales only.

On the doubtfulness of many figures related to e-commerce see OECD (2000 b), Brousseau (2000b))

² Between 1996 and 2000, Amazon.com' sales rose from \$ 16 millions to \$ 2,750, but its cumulated losses over these five years reached \$ 588 millions. Figures are often worst for competitors : Barnes & Noble.com (Books & CDs) lost \$ 158 millions over sales of \$ 320 millions in the year 2000; Lastminute.com (Travel) lost £ 3.7 millions over sales £ 35.7 sales in 1999-2000 ; Priceline (Travel) lost \$ 2.6 million over \$ 1,240 millions in 2000., etc. e-Bay seems to be the only profitable business (its profit reached \$ 48 millions over sales of \$ 431 million). However, e-Bay is not a retailer, but an informediaries.

³ It must be recalled that commercial intermediaries account for a significant share of our economies. In France, 1 million of the 1,8 million companies are retailers, brokers or wholesalers; they account for 10,8 percent of the GDP; and they employ 12,0 percent of the workforce (Source INSEE 1994 & 1998). In the US the retail and wholesale trade account for 15,84 percent of the GDP (Source Survey of Current Business, 1995) Moreover, distribution costs account for up to 60 percent of the price for certain goods such as books and music records (Source EITO 1997)

⁴ Following several months during which the press used to popularize the idea of disintermediated markets, the same press has been describing a movement of re-intermediation for the last months. In the same vein, financial investors re-directed their funds from B-to-C start-up toward B-to-B projects. Implicitly, they recognized that B-to-C will remain heavily intermediated by traditional commercial companies.

⁵ I speak of "macro-transaction" because in practice there is a complex set of transactions to bring a good from a producer to a final consumer. According to Williamson's definition of what a transaction is — i.e. a transfer of goods or services across a technologically separated interface — there are several transactions between these two agents. In the same time, all these transactions relate to each other. Moreover, they are economically interdependent (as it will be pointed out later). Last but not least, the set of transaction strongly depends upon the way intermediation is organized between the two extremities of the chain. This is why, when one think of the role of commercial intermediaries, one has to take into account this notion of macro transaction to get a better understanding of how it is governed by the three generic parties : the supplier, the consumer, and the potential intermediary.

⁶ Since all goods and services do not raise the same coordination problems, the four functions can be bundled into different ways in various transaction chains. This is why commercial intermediation organization is contrasted across different industries.

⁷ Of course, manufacturers have strong incentives to invest in reputation, as well. They especially try to create brand names associated to (objective of subjective) features that differentiate their products. In a sense, these investments in brand names can be considered as competing the investment made by distributors. It is obvious that a company like Coca-Cola created a brand which reputation is relatively independent of its distribution channels. However, when the service provided by the retailer matters for the quality or the image of the product, the investment made by the retailer and the manufacturer are complementary. Incentives to invest in reputation by the commercial intermediary is thus depending upon the importance of the service delivered by the retailer on the quality of the couple "product-service" bought by the consumer. It is therefore very sensitive to the features of the good or service in question.

On the other hand, it has to be pointed out that in a world where several hundreds thousands manufacturers exist, most of them do not have the ability to create famous brand names, because of the bounded rationality of consumers. All the arguments made above then apply without restrictions.

⁸ The potential impact of search engines has however to be qualified. As pointed out by many surveys, on-line retailers tend to prevent the access of smart agents used by search engines to compare posted prices. Moreover, most of the existing engines — which deal with very specific products; essentially electronic and computer components — lead to retailers that adopt "bait-and-switch" strategies. Beside the selected "best price", they propose alternative offer designed to attract customers and capture a share of their surplus (Ellison and Fisher Ellison (2000)). In addition these authors point out that most customers do not use price search-engines (White (2000)), and that in 1997-1998, 70 % of them were buying books and CDs on a single Web site (Johnson et al, 2000). Last but not least, several specialists consider that the recognition of trademark over the Internet prevented sophisticated search engines to develop. Indeed, if brands and trademark would not have been enforced in the cyber world, the only way to develop e-commerce would have been to develop search engines able to compare various features of the products and prices... in a kind of search model "à la" Lancaster.(1979).

⁹ Brousseau (1999) points out the reasons why electronic markets are often prevented to develop by the supply side. In order to avoid too strong competition, suppliers prefer to develop electronic distribution systems designed to enable them to discriminate, but provide their customers with differentiated and tailored services, instead on marketing their products on an electronic market (based for instance on two side blind auctions).

¹⁰ Degriftour, now a subsidiary of LastMinute.com, is a French site selling discounted travel and touring services. The company is only a broker between tour operators, airlines and hotels that need to discount their excess capacities, and the clients that are seeking cheap travel. In order to make it acceptable for the customers to pay different prices for close substitutes, these services have to be differentiated. Selling discounted travel on a "take it or leave it" basis is one way to do it. Touring services provided on the Web are last minute, non-customizable and difficult to assess travel. They are therefore quite different from the guaranteed and customized services provided through face-to-face meeting by travel agents. Tour operators or airlines sell discounted capacities on the Web only when they become perishable. Moreover, they do so on an anonymous basis.

¹¹ Due to their better knowledge of consumers, commercial intermediaries are able to bundle the providing of offers to their clients in order to incite them to buy goods they will not have thought to buy otherwise. Doing so, they also reduce their search costs, resulting in more efficient matching.

¹² This case was documented both by Bailey (1998) and the US Department of Commerce (1998)

¹³ According to Goldman Sachs (1997) the average shipping charge is equal to 8 per cent of the cost of goods purchased on the Internet. According to the same study, the price paid to UPS to deliver a basket of various items purchased on the Internet leads to the same result: around 8 percent of the bill.

¹⁴ By mid-2001, Amazon.com seems to be more successful than many of its on-line competitors, as Barnes & Nobles.com. However, the competition we are interested in does not occur among these dot.coms. The competition we are dealing with is occurring among business models ; i.e. between the pure dot.coms — as Amazon — and well

established book distribution chains — as Barnes and Nobles in the US or FNAC in France — that developed on-line services in addition to their traditional distribution channels, to be able to cover the whole range of possible marketing channels.

¹⁵ Like other French case studies quoted in this paper, this case study was displayed in the Workshop "Business Economic Models" organized by P.J. Benghozi in the Centre de Recherche en Gestion (CRG) of the Ecole Polytechnique, Paris, 1998-1999. These cases are documented in Benghozi (2001).

¹⁶ Large French distributors thus bring to the market only 60 percent of the possible supply for consumer electronics and 40 percent for domestic appliances. Note that this is also a way to bring customer's search costs down. Indeed, large distributors select the best quality/price ratio for various levels of price and quality, reducing the selection efforts of consumers.

¹⁷ Existing on-line supermarkets are subsidiaries of large supermarket chains. First only large companies can sustain the huge losses necessary to penetrate the market. According to various experts, most existing sites have to bear losses that range from 50% to more than 200% of their sales. Such losses will have to be born for several (4-5) years. If one consider the story of Telemarket — a subsidiary of Galeries Lafayette, Monoprix and Casino, three important French supermarkets chains —, the dead the break-even point can be quite difficult to reach. Indeed, Telemarket was launched in 1983 with the Minitel. It switched to the Web in 1998. However, despite years of experience, a focus on the most profitable market (Paris and its neighborhood) and a dominant position on that market, Telemarket never made any profit. Second, in the supermarket business, 70% of the costs are linked to procurement. Only the very large distribution companies are able to benefit from their size to sensitively impact on these costs. However, as pointed out in the previous paragraph, the ability of supermarket chains to replicate their procurement advantage in the on-line business is still in question.

¹⁸ Right after the beginning of the deflation of the "Internet Buble", The "Journal du Net" began to list the collapsing dot com — these already established companies that went bankrupt, or became short in cash because investors decided to stop funding, or were unable to find a buyer (http://www.journaldunet.com/dossiers/atterrissage/tableaustartdown_us3.shtml). The "Journal du Net" identified therefore the companies that went out of the market (since the survey does not take into account mergers and acquisitions).

The following table points out that a majority of these companies were B-to-C e-Commerce web sites. By B-to-C web sites, we mean Web Sites dedicated to selling tangible goods and services. Many sites providing services on line had trouble as well.

While such surveys cannot be considered as precisely reflecting the actual facts, these figures points out that the business models of many e-merchant was non-viable, while it is less frequent for other types of applications.

Table 1: Collapsing dot.coms (Second Quarter 2000 to Second Quarter 2001)

(around here)

¹⁹ The strategic counter-attack of these independent small businesses could be to try to organize themselves in networks to benefit from synergy and leverage effects. The question is however: Would a pure informational integration instead of an organizational one be enough and workable? If they want to compete with already established distribution brands, and to share intangible assets (as marketing knowledge, reputation, etc.), they will probably have to merge and will no longer remain neither small, nor independent.

²⁰ Indeed, it is easy to see that there is a lot of real-world variation in the extent to which commercial intermediaries are relied upon. Some products are predominantly sold through commercial intermediaries (e.g. stereo equipment, sporting goods, groceries, popular books, records/CD's, shoes, furniture, etc.), while some others are sold by manufacturers (automobiles, sporting events, recreational activities, long distance telecommunications, etc.). Many products are even sold by both (real estate, clothing, computers, academic books, airline tickets). Moreover, the type of distribution network varies a lot ranging from specialized stores to general and department stores, and including mail order outfits, outlets organized in chain or not, etc. This implies that commercial intermediaries have greater economizing advantages for certain goods than others, and that the type and organization of those intermediaries matter. Our analysis should therefore be deepened both to better understand the economic of alternative forms of commercial intermediation, and the potential impact of digital technologies on the distribution of various goods and services.

²¹ Even this condition could be useless if one takes into consideration the possibility to encrypt the exchanged information that enable to make self-enforceable the agreements over digitized information exchanges (Elkin-Koren & Salzberger (2000))

Figure 1: Amazon.com vs Barnes and Noble Pricing Policies

Source: Bailey (1998),

Figure 2: The Impact of Information Networks on the Functions of Commerce

	Information	Logistics	Security	Insurance & Liquidity
Essential Assets	Information Network <i>Commercial Relationship</i>	Information Network <i>Tangible Assets</i>	<i>Expertise</i> <i>Reputation</i> <i>Commercial Relationship</i>	Market Knowledge <i>Commercial Relationship</i> <i>Financial Resources</i>
Network Potential Impact on Commercial Intermediaries	Bypass + Automation of Information Management	Monitoring of Logistics Subcontractors	Databases Access	Widening Number of Potential Partners

Assets for which services cannot be substituted by information networks
 Assets for which services can be substituted by information networks

Table 1: Collapsing dot.coms (Second Quarter 2000 to Second Quarter 2001)

	USA		France	
	Number	%	Number	%
B-to-C sites	72	35,4	19	39,5
On line Services (Insurance, Travel, Marketing, etc.)	33	16,2	3	6,2
Content Services (Media, etc.)	21	10,3	7	14,5
Portals, Community Sites	19	9,3	13	27,0
ISP and Internet Operators	17	8,3	2	4,1
Solutions & Technology Provision	17	8,3	1	2,0
B-to-B sites (eProcurement, Marketplaces)	12	5,9	1	2,0
Trading & Financial Information	9	4,4	2	4,1
Auction	3	1,4	0	0
Total	203	100	48	100

Data: Journal du Net

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