STRATEGIC MANAGEMENT IN THE NEW ECONOMY: MODERN INFORMATION TECHNOLOGIES AND MULTICHANNEL CONTACT STRATEGIES

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ABSTRACT

The so-called information revolution has loosened many tongues in the academic, business and policy worlds. The communis opinio is that the diffusion of modern information technologies in the global village is about to radically change the rules of the competitive game in many, if not all, industries. What the new rules may be, nobody really knows for sure. The New Economy, being characterized by the penetration of information technologies and the dominance of network arrangements, is born. Firms face the daunting task of developing a response to this new environment. How they respond depends in part on what they learn from their contact portfolio. Which contacts they have, and what information they get out of these contacts, shapes their response to the New Economy. A case in point is the Internet. Apart from stimulating the emergence of new value-adding products and efficiency-enhancing processes, an argument is that the Internet will shake up the century-old market institution by introducing

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information transparancies and network economies. This chapter’s objective is fivefold. First, we summarize the current state of the art in the multimarket competition literature. Second, we develop a multichannel contact framework that builds upon the established multimarket contact theory. Third, we briefly evaluate the New Economy debate. Fourth, we analyze what the emergence of this New Economy may imply for issues of competitive rivalry and strategic management in the context of multichannel contact management. Fifth, we illustrate part of the argument by briefly discussing the case of Java software.

INTRODUCTION

Industry competition and corporate performance do not only depend on objective features of a market, such as cost functions and demand curves, but they also reflect the subjective interpretations of relationships between companies – their communication, interaction and learning behavior. The theory of multimarket contact is an example of a framework that reflects this insight. If firms have overlapping multimarket scope, the fact that they meet each other in multiple markets as competitors (multimarket contact) helps them to recognize their interdependence. Moreover, multimarket contact facilitates the exchange of the strategic intent to behave friendly, or to exchange threats to retaliate upon aggressive behavior across the board. Multimarket contact theory’s counter-intuitive hypothesis is that, as a result of this recognition of interdependence and transmission of reputation, overlapping market scope may well weaken the intensity of competition by promoting (tacit) collusion. Additionally, multimarket contact can also transmit information to a focal firm from her contacts that stimulates the former’s learning behavior, particularly in the area of innovative technologies. In this chapter, we build upon this multimarket contact argument to develop a multichannel contact framework that may be well-suited to analyze the strategic consequences of the emergence of the New Economy.

A well-established argument is that firms choose their behavior on the basis of information they obtain from their contacts, with whatever party and of whatever nature, with their environment. A case in point here is the well-studied boundary-spanning function that helps to manage a firm’s resource dependencies [see e.g., a textbook such as Daft’s (1998)]. In this context, multimarket contact is only one channel out of many. We focus especially on contact through inter-firm alliances and Internet commerce, next to multimarket contact. These and other contact channels (or networks) are information conduits through which firms learn about new developments and possible strategies. The Internet is an example of a new development, closely related to the emergence of the
so-called New Economy, that challenges a modern firm’s strategic adaptability. This raises the general question as to how the Internet technology impacts upon corporate interaction and performance, as well as the specific question as to how this will affect the importance of multimarket and multichannel contact. The chapter is organized as follows. We begin with an abbreviated survey of the multimarket contact literature, summarizing the theory’s core in five propositions. We then extend this multimarket contact theory to a multichannel contact approach to business strategy, which is illustrated by developing three additional propositions. Firms have a portfolio of contacts, which includes multimarket contacts next to contacts through a variety of alternative channels. By way of intermezzo, a brief introduction into the New Economy debate is included. Subsequently, we apply the multichannel contact framework to the Internet case, particularly by elaborating upon the strategic responses to new Internet opportunities, such as e-commerce, by formulating eight hypotheses. As a first step, we continue by describing an illustrative case study of the diffusion of the Java Internet programming language among computing firms. The chapter is concluded with an evaluating appraisal.¹

MULTIMARKET CONTACT THEORY

Collusion from Multimarket Contact

Multimarket contact analysis, with roots in the industrial organization (IO) and strategic management (SM) literatures, argues that firms reduce competition by (tacitly) coordinating behavior with companies whom they meet in various markets (van Witteloostuijn & van Wegberg, 1992). Multimarket contact refers to the number of markets where, say, two firms ‘meet’, that is, where they compete with each other. It indicates the extent to which two (or whatever number) diversified companies have an overlapping multimarket scope, in terms of locations and/or products. On the basis of game-theoretic analyses, IO economists have proven that overlapping multimarket scope facilitates the transmission of (tacit) collusion from one market to several others (Feinberg, 1984; Bernheim & Whinston, 1990; van Wegberg & van Witteloostuijn, 1992; van Witteloostuijn, 1993). The central argument is that the benefit of cheating in market 1 is dominated, under specific conditions, by the cost of the collapse of the collusive equilibrium in markets 2 to n. After all, if firm A cheats upon firm B in market 1, then firm B can exploit their full multimarket overlap, including markets 2 to n, in her retaliation strategy. This multimarket retaliation threat may facilitate the sustainability of spheres-of-influence, reciprocal-hostage and market-sharing equilibria. This line of reasoning produces multimarket
contact theory's central (tacit) collusion prediction, which is captured by Proposition 1.

Proposition 1 (Collusion from multimarket contact): The higher multimarket contact between two (or more) firms, the less intense their rivalry will be, leading to, for example, higher prices and higher profit margins, or less entry by either of both rivals in the other firm's markets.

Baum and Korn (1999) identify three, closely related, types of argument to support the counterintuitive prediction as to the anticompetitive effect of multimarket contact. Briefly, multimarket contact: (a) offers experiments that facilitate learning (learning vehicle), (b) acts as a reputation-transmission mechanism (reputation device) and (c) produces instruments for enforcing (tacit) collusion (retaliation power). Via these three routes multimarket contact tends to blunt the intensity of competition (Proposition 1's multimarket contact collusion hypothesis) by operating as an information conduit that facilitates learning behavior, communicates reputation and carries a retaliation threat. The result is that multimarket firms may downplay competition by, for example, differentiating their products, moving towards different market segments or raising price levels. To set the scene, we start with a summary of the central information conduit argument, with an emphasis on the learning angle. Subsequently, we briefly discuss both subtle underlying mechanisms of multimarket contact (reputation and retaliation) in turn.

Multimarket Contact as Learning Vehicle

As noted, multimarket contact serves as a conduit for communicating strategic intentions to another firm. This is the crucial information effect. By engaging in some action in one market, a firm may signal her intentions to her rivals. This is the key argument underlying Proposition 1's 'static' prediction of multimarket collusion. In a dynamic interpretation, the firm may probe a market in order to learn about the incumbent firms as to how they react to her move. Subsequently, she can use that information in other markets where she interacts with these companies. Competition is, in this story, a learning process where firms finetune their interaction with one another by playing a subtle information-transmitting multimarket game (cf. Cassidy & Loree, this volume). In particular, they try to establish an equilibrium that may take the form of either, on the one hand, competing for profitable positions in an industry or, on the other hand, maintaining a collusive order so as to avoid cut-throat competition across the board. Smith and Wilson's (1995) study, for example, indicates that there is indeed a
potential for competitive learning. They investigate the effects of multimarket contact on how an incumbent firm reacts to entry into her market. If the entrant and incumbent have multimarket contact, the incumbent firm may retaliate by entry into or price cutting in the entrant’s markets. Unexpectedly, they find that in approximately 57% of all entry moves studied, the incumbent firms did not respond at all. If they do respond, they may not respond aggressively, but may rather raise price upon entry. A typical multimarket strategy – the counterattack in the entrant’s market – is only the third most frequently observed response in their sample. This suggests that entrants may face a high degree of uncertainty about how the incumbent firm may react to their initial move. This finding supports the idea that firms may use entry as a probing device so as to learn about the incumbent firms’ competitive strategies. Moreover, by raising rather than reducing price the incumbent may signal her willingness to collude across markets, which relates to the issue of reputation building (see below).

Much learning amounts to imitation (Nelson & Winter, 1982; DiMaggio & Powell, 1983). Firms are likely, in choosing their strategic moves such as investing in their scope, to emulate the behavior of firms they have much contact with. Greve (1998) found evidence for this in an interesting study of how U.S. radio stations adopt new radio formats. Greve’s (1998) approach focuses on learning and imitation, and suggests a new direction for multimarket contact research that focuses on the broader issue of multimarket contact as an information conduit that facilitates all kinds of learning. If we recognize multimarket contact’s nature as an information conduit, we can envision firms operating in multiple markets as a multimarket information network. Each firm is a node in the network. Each dyad of two firms meeting in one market represents a link in the network. The higher the multimarket contact between two firms, the more linked they are, and the more central is their place in the network. That is, a firm with many concentrated multimarket contact links, on the one hand, takes up a central place in the network. A firm whose activities are scattered across multiple markets, on the other hand, tends to have low levels of multimarket contact with her rivals, and is thus a peripheral player. The same holds true for a firm who is active in few markets only. A central firm is likely to have a larger impact upon the nature of an industry’s competitive equilibrium than a peripheral player. Network analysis can reveal the structure of the network, and the place of firms within this structure (Gulati, 1995; Madhavan, Koka & Prescott, 1998). Measuring multimarket contact in terms of a multimarket contact network structure implies a step toward exploring how multimarket contact may affect industry competition and corporate performance. The structure of the multimarket contact network may reveal information flows throughout the industry. In a static context, a more closely knit network can
be hypothesized to be associated with high price and profit levels in the industry. A tightly-knit multimarket contact network increases the pressure toward mimetic adoption (Greve, 1998). This argument suggests a 'dynamic' learning addendum to Proposition 1 'static' multimarket collusion prediction, as reflected in Proposition 2.

**Proposition 2** (Learning from multimarket contact): (a) Firms are likely to learn from the behavior (e.g., entry, exit and pricing moves, as well as advertising and R&D strategies) of firms with whom they have a high level of multimarket contact. (b) An industry equilibrium is particularly affected by the behavior of firms who occupy a central place in the multimarket contact network. (c) A tightly-knit multimarket contact framework is associated with high price and profit levels.

**Multimarket Contact as Reputation Device**

An important multimarket contact mechanism pertains to influencing the rivals' expectation about the nature of future interaction (Hughes & Oughton, 1993). Game theory has taught us that the sustainability of a (tacitly) collusive arrangement critically depends upon the expectation of firms that they will continue to interact in the future (see e.g., the textbook exposition in Bierman & Fernandez, 1993). Colluding firms limit output to raise prices (in a so-called Cournot context), or avoid price-cutting strategies (in a Bertrand setting). The individually rational action is to free ride: let others reduce their output or keep their price at a high level, and increase one's own output level to benefit from the high price or obtain large sales after a one-sided price cut. To sustain a collusive equilibrium, firms threaten each other that if a rival cheats, others will punish the cheater in the future. Cheating destroys a reputation, to which other firms react by reverting from collusive behavior to competitive strategies. This threat is credible if firms will indeed continue to interact in the future. On the one hand, anything that increases the expectation of continued future interactions, therefore, tends to stabilize the collusive arrangement. Meeting each other in multiple markets has precisely this effect. If firms meet in multiple markets, there is a greater chance that they will continue to interact in the future. In this case, multimarket contact (in markets with a higher survival potential) may protect the collusive status quo in a case where otherwise the collusive equilibrium would break down. On the other hand, anything that undermines the expectation of future interaction destroys a collusive settlement. In a declining market, for example, a selection of the established firms may be
expected to exit from the market. The exit candidates tend to cheat, as they have nothing to lose from punishments in the future. This end-game effect is likely to eliminate the collusive arrangement.

So, reputation is a relational asset with foresight that is produced by transmitting information: the reputation of firm X is what other firms think about X’s future features, behavior or performance, which clearly is the outcome of a learning process. Thus, multimarket contact as a reputation device relates to multimarket contact as an information conduit. By communicating credible signals across markets, a firm may develop a reputation of aggressive multimarket punishment (so as to threaten any potential cheater) and peaceful multimarket cooperation (so as to protect the profit from collusion). That is, one kind of experiment that firms enact upon each other in developing their reputation is to see how each individual rival reacts to market opportunities. For example, by responding in a tit-for-tat manner to competitive moves across multiple markets, a firm may provide the right signals to set in motion a process of softening competition, which may produce (tacit) multimarket collusion. Then, the short-run cost of the reputation-building aggressiveness today is outweighed by the long-run benefit of the resulting reputation of aggressiveness tomorrow. Proposition 3 summarizes this reputation argument.

Proposition 3 (Multimarket contact as reputation device): A firm’s reputation of aggressive multimarket punishment and peaceful multimarket cooperation facilitates the sustainability of a (tacitly) collusive arrangement across a set of markets.

Multimarket Contact as Retaliation Power

Theories of multimarket competition that apply game theory or conjectural variation modeling have explored an aspect of multimarket contact that is inextricably bound up with the reputation device side of the coin: the threat of multimarket retaliation. Building upon the path-breaking work of Bain (1956), many IO economists have finetuned the game theory of the incumbent’s (threat of) retaliation strategy to a newcomer’s (threat of) entry move (Gilbert, 1989). A key issue in this stream of literature is the game-theoretic analysis of credibility. That is, the incumbent’s threat to retaliate upon a newcomer’s entry move is credible if, and only if, the incumbent’s execution of the \textit{ex ante} retaliation threat signal is the \textit{ex post} profit-maximizing strategy. Then the retaliation announcement is a credible threat that may well keep the newcomer from entering the incumbent’s market in the first place. The impressive stock
of incumbent–entrant game models that have occurred in this tradition reveal the credibility-enhancing devices that can be exploited by an incumbent firm to develop a successful retaliation threat strategy, suggesting the potency of such strategies as irreversible sunk cost investment (by e.g. installing overcapacity) and aggressive response reputation building (by e.g. launching price wars). In particular, this literature is very informative as to the underlying conditions that may transform an empty threat into a credible announcement, with examples being low discount (interest) and high growth (demand) rates (cf. Proposition 3). In the 1980s, the single-market setting of this branch of IO theory has been extended to the multimarket context. Basically, this extension: (a) enlarges the set of credible threat strategies (i.e. another-market retaliation move) and (b) adds another credibility-enhancing condition (i.e. the number and size of contact markets). This is reflected in Proposition 3.

So, IO’s multimarket competition theory focuses on analyzing threat–reciprocal threat equilibria in multimarket settings. Basically, depending upon the game’s conditions, three different types of ‘pure’ (ignoring the many betwixt-and-between cases, such as the reciprocal-hostages arrangement) equilibria may emerge: (i) spheres-of-influence, (ii) market-sharing or (iii) head-on rivalry outcomes. The third equilibrium is the benchmark case in which a competition-avoiding multimarket arrangement fails to materialize: in each of the contact markets, that is, the multimarket firms are involved in aggressive fights for market share. The first and second equilibria are particularly interesting when multimarket contact operates as the condition that facilitates the emergence of a collusive arrangement that would have collapsed in a single-market setting. The strength of this multimarket contact effect derives from the ability to punish a rival’s non-collusive behavior in market 1 in the other markets 2 to n as well (cf. Proposition 1). This relates to the power to retaliate. That is, the threat of other-market retaliation operates as a disciplinary device in the focal market. As Bernheim and Whinston (1990) have argued, firms may collude on a market-by-market basis, implying that the multimarket dimension as such is immaterial. The ‘real’ multimarket contact effect comes in only when there is an asymmetry in the abilities of firms to sustain the collusive equilibria in different markets. That is, firms export their ability to collude in market A to a market B and vice versa, whilst, taken in isolation, they would not be able to sustain collusion in neither market A nor market B. The multimarket contact notion thus measures the number of markets in which multimarket firms have the instruments at hand to punish each other for cheating in whatever market in their portfolio of activities. This multimarket retaliation transfer argument, which sets apart multimarket collusion from its single-market (or market-by-market) counterpart, is summarized in Proposition 4.
Proposition 4: (Multimarket contact as retaliation power): The multimarket contact effect by transferring retaliation power from one market to the other may materialize if the ability of the multimarket firms to sustain a collusive arrangement in different markets, is characterized by asymmetry.

A Multimarket Contact Framework

Without doubt, the multimarket contact literature has explored in great depth and *dido* detail a striking effect that multimarket contact may have on a firm's behavior – i.e. the ability to sustain collusive arrangements across markets that would collapse in a single-market setting. This is an insightful result that is very helpful in deepening our understanding of the (non-)competitive dynamics in industries that are characterized by a plethora of multimarket contacts. On top of the key insights summarized in the four propositions introduced above, much multimarket contact modeling has revealed the collusion-enhancing and impeding conditions that may interact with the central multimarket contact effect. This additional set of results is summarized in a fifth proposition, which lists a number (but not all) of such contingencies.

Proposition 5 (Multimarket collusion contingencies): The multimarket contact effect interacts positively with the expectation of continued interaction, discount rate level, firm-level survival chances, behavioral transparancy, market growth rate, industry concentration, managerial continuity, firm size, ownership stability and strategic homogeneity.

The arguments underlying Proposition 5 are embedded in game-theoretic reasoning of the kind we discussed above. A representative example of an advanced game-theoretic analysis is Bernheim and Whinston (1990). According to this game-theoretic interpretation of multimarket contact, conditions that enhance an aggressive punishment or peaceful cooperative reputation will support the sustainability of (tacit) collusion. Equivalently, any condition that increases the chance that two firms have a reciprocal profit at stake in the future will enhance the sustainability of a collusive arrangement. On both accounts, game-theoretic modeling has revealed that the multimarket contact effect (cf. Proposition 1) interacts positively with conditions such as the survival chances of the individual firms, height of exit barriers, level of the discount (interest) rate, behavioral transparancy, market growth rate, industry's concentration level and homogeneity of corporate strategies. Reversely, changes in ownership or management of a firm may disrupt her original reputation, thus threatening any collusion built on this reputation. Similarly, acquisitions or mergers may initially have this pro-competitive effect.
Fig. 1. Multimarket Contact Framework.
By way of summary, Fig. 1 offers an overview of the multimeter contact framework, distinguishing multimeter contact predictions, mechanisms, contingencies and outcomes, and linking the theory's key elements to the five propositions.

The multimeter contact literature is associated with two important predictions: Proposition 1, multimeter contact may facilitate the sustainability of across-market (tacit) collusion, and Proposition 2, multimeter contact facilitates across-market learning. The effect of multimeter contact is best understood by recognizing multimeter contact's nature as information conduit. Particularly two mechanisms underlie the collusive effect of multimeter contact: (a) a multimeter firm may develop an across-market reputation of aggressive multimeter punishment and peaceful multimeter collusion (multimeter contact as reputation device: Proposition 3); and (b) a multimeter firm may transfer her retaliation power from one market to the other (multimeter contact as retaliation power: Proposition 4). From game-theoretic analyses, a list of multimeter collusion-enhancing and impeding contingencies is derived that impact upon multimeter contact's effectiveness as information conduit, reputation device and retaliation power (Proposition 5). Together, the five key propositions of this multimeter contact framework produce a theory that explains why, when and how different multimeter contact outcomes will occur.

**A MULTICHANNEL CONTACT FRAMEWORK**

*From Multimeter to Multichannel Contact*

Starting from multimeter contact theory, an extended and enriched multichannel contact framework can be developed that may increase the explanatory power of the argument by adding another insight to the existing multimeter competition apparatus: a firm can exploit other contact channels besides multimeter encounters. That is, firms do not only experience inter-rivalry interaction in the product market, but they also interact in resource markets, as well as in (anti or pro-competitive) strategic alliances, cross-shareholdings and interlocking directorates. These additional contact channels, too, may offer powerful instruments to reward or punish each other in the context of a multichannel contact game. As such, this insight is anything but new. For example, antitrust authorities are aware that inter-firm alliances may have an anti-competitive effect. Such alliances may be permitted, however, if they are expected to support useful activities such as (joint) research and development that, by the end of the day, benefit society at large. In this context, van Wegberg, van Witteloostuijn and Roscam Abbing (1994) and van Wegberg and van Witteloostuijn (1995)
make the point that inter-firm R&D alliances might offer additional punishment instruments, next to and on top of traditional product market interdependencies, that support tacit collusion in product markets. Extending this line of reasoning produces the argument that firms may have a portfolio of different contact channels that they can use as instruments in supporting collusive arrangements (an adapted Proposition 1) and learning opportunities (a revised Proposition 2).

The case of the information conduit argument is illustrative. As an information conduit, multistate contact complements many other forms of contact. As is well known from the organization sciences literature in such areas as network analysis and organizational learning, firms exchange information with rivals in various ways. They cooperate in all kinds of inter-firm alliances, such as R&D joint ventures and closely-monitored outsourcing contracts. They may also communicate indirectly, by sharing consultants, suppliers, shareholders, banks and/or directors (the so-called interlocking directorates). Contact plays a dual role for learning. It provides access to rich information that needs an elaborate context (such as gestures, persuasion or example) to be transmitted and interpreted sensitively. And it exposes an organization to environmental pressure by rivals or partners. Thus contact may be especially important because of bounded rationality.

Multistate contact is part of a portfolio of different contact channels. For example, contact in inter-firm alliance networks may substitute for multistate contact, and thus blur the latter’s effect on performance (van Wegberg & van Witteloostuijn, 1995). Boundedly rational players may postpone (radical) decisions until they are directly confronted with the need to act through their contact portfolio. Adam Smith (1970: 232), who else!, already conjectured that firms seek contact with each other, through a wide variety of routes, in a conspiracy against the public interest. Firms want to establish reciprocal contact when price signals fail to offer information timely or adequately enough to coordinate behavior, provided that society allows them to collude in this way. Whether or not firms design their scope with a view to creating multistate contact (as Scott, 1989, suggests that they do), may thus depend on the alternative contact routes available to them.

The above bits and pieces point the way to a full-fledged framework of multichannel contact. Developing such a framework is too ambitious an undertaking in this chapter, though. Rather, we can offer a first step by summarizing the intuition behind four stepping stones for a multichannel contact framework by briefly discussing: (1) channel sources, (2) channel features, (3) channel purposes, and (4) channel externalities. Together, these four stepping stones offer input for multichannel contact management. This preliminary multichannel contact framework is summarized in Fig. 2.
Fig. 2. Multichannel Contact Framework.
Channel Sources

A firm has a portfolio of contacts, within and across different channels. She has contacts with other firms by means of e.g. their shared markets, alliances, inputs, contracts, locations, shares and/or directorates. For example, firm A may meet firm B in similar product domains (markets), R&D joint ventures (alliances), shared relationships with consultancy agencies (inputs), outsourcing contracts with suppliers (contracts), production plants in the same countries (locations), portfolios of cross-holdings (shares) and reciprocal board memberships (directorates). The contact through such channel sources may be either direct or indirect in nature.

(1a) A direct contact arises whenever focal firm A and her rival B operate face-to-face in the context of this channel source. For example, they compete for market share in the same market, they cooperate within a joint technology alliance, they operate selling units in the same regions, they buy cross-ownership stocks and their CEOs are on each other’s boards. Such direct contacts offer ample opportunities to sustain a collusive arrangement by effectively communicating reputation and retaliation signals, as well as to facilitate across-firm learning.

(1b) An indirect contact emerges whenever focal firm A meets her rival B through a shared channel source with party C. For instance, firm A and rival B may ask for advice from the same consultancy firm C, they may cooperate with the same partner C in different technology alliances, their CEOs may sit on different boards with the same colleague C and they may buy a key intermediate product from the same supplier C. Such indirect contacts can be exploited to transmit information from firm A to rival B (and vice versa) via channel C, which, again, helps to facilitate cartel-like conduct and across-firm learning.

By operating a portfolio of channel sources, associated with both direct and indirect contacts, firm A and rival B may manipulate their reciprocal information transfer to their (mutual) competitive advantage.

Channel Features

In the context of a multichannel contact framework, managing a multichannel portfolio of contacts may benefit from carefully distinguishing four different within-channel and across-channel features.

(2a) Different contact channels can be complements. For instance, different contacts may give access to different kinds of information or may strengthen the threat of multichannel retaliation. Additionally, a firm with
many different contacts, within and across channels, is likely to obtain valuable information, competitive reputation or retaliation power, which makes her an attractive contact target for others. Through this virtuous cycle, a well-connected firm develops a new network or a valuable position in an established network.

(2b) Different contact channels can be substitutes. A firm may exploit alternative contact routes to achieve equivalent (i.e. competition-reducing or learning-enhancing) benefits. For example, a retaliation threat may be communicated effectively (credibly) by either: (a) a foothold strategy in a rival’s home market, or (b) signaling the willingness to destroy a successful R&D joint venture. Deploying both contact channels simultaneously may well be an overinvestment in the capability to retaliate, implying a cost-benefit disbalance.

(2c) Different contact channels are associated with different direct costs. The development of a contact channel requires an investment in and over time. A firm must put money and time in e.g. drafting outsourcing contracts or creating R&D joint ventures. Additionally, maintenance of a contact channel does not come for free. Without the direct cost of monitoring an outsourcing contract or running an R&D joint venture the contact channel is very likely to break down.

(2d) Different contact channels are associated with different indirect costs. The indirect cost concept pertains to the benefit of foregone alternatives. On the one hand, if a firm decides to allocate scarce resources to maintaining e.g. a foreign foothold or a cross-holding participation, then this contact channel strategy limits her discretion to invest elsewhere. On the other hand, the option to appropriate firm-level technological knowledge may be history when valuable information is given away through the R&D joint venture contact channel.

The effectiveness (1a and 1b: contact channels’ complementarity or substitutability) and efficiency (1c and 1d: contact channels’ direct and indirect costs) of a contact channel are likely to depend on the features of the parties involved and the kind of information being transmitted. For instance, inter-firm R&D alliances will be relatively efficient transmitters of technological information, whilst multimarket contact may be an efficient vehicle for competitive learning.7

Channel Purposes

From the perspective of a value-maximizing firm, maintaining a portfolio of multichannel contacts must serve a number of purposes. After all, developing and sustaining such a portfolio is anything but consuming a free lunch. In line
with Propositions 1 to 4, the careful management of a multichannel contact portfolio may produce four related benefits.

(3a) The key objective that is central to much original work in the multimarket contact tradition pertains to the establishment and maintenance of a collusive arrangement that would collapse in the context of single-market competition. This is reflected in Proposition 1 above, but now in a multichannel rather than multimarket setting.

(3b) A multichannel contact portfolio can be exploited to obtain information that enhances learning. Then, the multichannel contact portfolio operates as a learning vehicle. This is the dynamic extension of the well-established static mutual forbearance argument. This is the multichannel version of Proposition 2.

(3c) By establishing and manipulating a multichannel contact portfolio a firm may develop a tailor-made reputation of aggressiveness and peacefulness. So, a multichannel contact portfolio can be a reputation device. This is Proposition 3 in a multichannel context.

(3d) A multichannel contact portfolio can be a source of retaliation power. Having multiple contacts makes a firm flexible, and helps her to retaliate against a firm that threatens her competitive position. This helps swift recognition of and reaction to competitive actions. This is the multichannel adaptation of Proposition 4.

The secondary purposes of reputation and retaliation signaling are instrumental in reaching the primary objectives of across-firm learning and collusive conduct. That is, the effectiveness of a multichannel portfolio is dependent upon the firm’s reputation and retaliation profiles. For example, firm A’s objective, in her confrontation with her rival B, of collusive conduct in market I is not only enhanced by developing a reputation of aggressive retaliation in the markets I and II in which both firms compete for market share (the multimarket collusion Proposition 1), but also by a credible threat of undermining the firm A–firm B technology alliance III.

Channel Externalities

Multimarket contact theory has shown that multimarket contact has significant effects on competitive behavior by enhancing collusive conduct. Above, we have extended this argument in a multichannel contact setting by exploring the key argument that this collusive effect derives from the information conduit nature of whatever contact. In such a multichannel contact portfolio context, the value added of the portfolio externalities of a firm’s contact set cannot be
ignored. To this aim, we may envision the firm as the focal node in a network of multichannel contacts that is associated with a number of network externalities. The value of a position in such a contact network consists of access to a wide variety of information, reputation and retaliation channels. The more contacts a firm has, the more adequate she can respond to threats and opportunities in her environment. By and large, four different network externalities can be distinguished.

(4a) Contact transmits information that can speed up the diffusion of an innovation (Greve, 1998). The multichannel contact network creates a group of firms (players) with shared information. This is likely to be relevant especially when information is tacit and the market is non-transparent. The multichannel network provides ample opportunities to imitate the best practices that a firm observes in her multichannel contact portfolio. For example, firm A may learn from her alliance partner firm B how to increase the efficiency of her production processes, which she then transfers to firm C through the board membership of her CEO and to firm D as a result of the experience of the consultancy firm that firms A, C and D share. This is the network's imitation effect.

(4b) Contact may help to enhance the legitimacy of new ways of conduct. For example, contact may legitimize change by enabling a manager or employee of firm A to justify the introduction of new organization structures by referring to an innovative, and well-performing, contact B as an example to be followed. Generally, the legitimacy of new conduct is highly dependent upon what is happening in the firm’s environment at large. For instance, the legitimacy of a new product is enhanced if high-status firms launch the new product, too, or if high-status banks are willing to finance the new venture. All this refers to the network’s legitimation effect. Legitimation may also create contact. In their chapter in this book, Stephan and Boeker explore the aspect of legitimacy in great depth. They argue that at low levels of multichannel contact, a firm will enter a market of her rival because the rival’s presence in that market legitimizes the firm’s managers to enter that market, too.

(4c) As explained above, a multichannel contact portfolio can fuel learning. That is, by obtaining information from a wide variety of sources, through the exploitation of a diverse portfolio of contact channels, a firm may enhance her creativity. For instance, focal firm A may learn from her partner B in their technology alliance C how to combine the new process technology, as developed within the alliance, with the information technology expertise of her consultancy firm D to produce a leapfrogging
efficiency gain. This way of combining different pieces of information into something new relates to the network's innovation effect.

(4d) The multichannel network may offer firm A information that she can use to obtain a competitive advantage. Clearly, information influences decision making. Knowing a firm's information sources makes her somewhat predictable. However, the more varied a firm's information sources (contacts) are, the less predictable she becomes to her individual contact partners. In a competitive environment, this very diversity and unpredictability can be a source of competitive advantage. This is the network's competition effect.

The multichannel contact forces of imitation and legitimation induce within-network conformity (or homogeneity), whereas the multichannel forces of innovation and competition enhance within-network variety (or heterogeneity). This homogeneity–heterogeneity forces are well-known from the literatures on, for example, institutional theory (e.g. DiMaggio & Powell, 1983) and organizational ecology (e.g. Hannan & Freeman, 1977) that focus on the explanation of (the lack of) organizational variety. Our argument here is that the understanding of organizational homogeneity and heterogeneity may benefit from systematically taking notice of the above multichannel contact externality effects that are so inextricably bound up with the portfolio's network nature.

Channel Management

Together, the above four features of a multichannel contact portfolio suggest a framework that can help a firm to manage her network. As said, Fig. 2 summarizes this multichannel contact management framework. From an external environment perspective, multichannel portfolio management involves the selection of contact channels, as well as the development of the portfolio's network features. In this context, the above story offers a list of channel sources, channel features, channel purposes and channel externalities that must be taken on board whilst deciding on the selection and development of the network. From an internal perspective, multichannel contact management requires carefully guiding and leading the (wide) variety of different contacts. This offers many challenges to the way the firm organizes multichannel contact management internally. On the one hand, information overload or a bureaucratic structure may make the firm insensitive to information, and thus to the information advantage of contact. On the other hand, well-functioning internal communication structures reinforce the firm's absorptive capacity of new information. The better the internal communication and learning (absorption) skills are, the higher the usefulness of external contacts. Improvements of
internal communication – as brought about, for example, by using an Intranet infrastructure – increase the exchange of information internally, which helps a firm to make sense of her contacts. The internal organization of multichannel contact management, although very important, is only a side issue in the context of the current chapter. For now, we restrict the argument to an illustration of how Fig. 2’s multichannel contact framework can be used to derive new insights. To this aim, we focus on developing three illustrative propositions in the context of a technology shock.

The emerging multichannel contact management approach to business and corporate strategies will, we believe, be able to explain how firms react to important shocks that affect their entire industry. The emergence of the Internet is a key example of such a shock: many managers and gurus liken it to a revolution (see below). Firms are extremely uncertain as to how to best react to the Internet revolution. If they are followers rather than pioneers, they may use their established multichannel network of contacts to find out how others cope with the Internet technology. This raises questions such as “When do you follow a leader?” (timing of the adoption of an Internet strategy; this relates to the network’s imitation effect) and “Whose lead do you follow?” (if first movers develop different Internet strategies; this is associated with the network’s legitimacy effect). Some Internet providers offer free access to Internet, whereas others still charge a fee: which example must be followed? If a firm receives conflicting signals, she needs to decide which example to imitate. We argue that firms attach different weights to different contacts, depending on how relevant contacts are to a particular signal and decision.

A revolutionary technology shock forces firms to search for the unknown. In such a condition of fundamental uncertainty, a firm cannot restrict her contact scanning strategy to the traditional inner circle of multimarket contacts. The reason for this is, at least, twofold. First, in times of technological revolution, much of relevance to the focal firm may be happening in many different corners of the economy. In Schumpeterian terminology, innovative behavior is inextricably bound up with finding new combinations, of old and/or new elements. Such new combinations may well emerge in contacts with new partners. Higher contact heterogeneity increases the changes of tracing new interesting ideas or practices. Hence, in an era of high innovativeness and much technological uncertainty, a contact portfolio’s learning effectiveness can be increased by promoting intra-portfolio’s contact channel diversity. This can be reached by seeking contact with non-traditional partners outside the traditional inner circle, particularly by including contacts with innovators in different industries. Second, a revolutionary new technology is associated with much tacit knowledge that is not yet widely diffused throughout the economy. Such tacit knowledge is
best appropriated through direct and intimate contact with those most likely to have developed innovative knowledge, thus facilitating the transmission of the unspoken. This is not easily done via traditional, arm’s length multimarket contact. Rather, explicit cooperation – and thus intimate contact – in alliances or through cross-ownership is a much more effective learning vehicle in this context. This suggests Proposition 6 about the relative importance of different contact channels.

**Proposition 6** (Relative importance of multichannel contacts): In the case of a technology shock (major innovation), firms attach a greater weight to multichannel contacts than to multimarket contacts since the former provide: (a) heterogeneous contacts, and (b) intimate (tacit) knowledge transmission.

If a firm receives conflicting signals, which is very likely in an era of fundamental technological uncertainty, she will also attach different weights to different contact partners, depending upon the characteristics of the contact firms involved. In line with the above argument, particular contacts are more promising than others in times of revolutionary technological change as new (tacit) knowledge transmitters. Here, at least three contact firm characteristics spring to mind. First, some contacts are more relevant than others by offering access to important technological knowledge. This is obvious. In the Internet age, an alliance with an Internet e-tailer makes more sense for a retailer than an additional contact with an old-fashioned wholesaler. Second, the desired increase of multichannel contact portfolio heterogeneity can be obtained by allying with dissimilar firms, in terms of their contact network or in-house resources, rather than by connecting even further with similar contacts. So, the retailer above can better join forces with an Internet firm than with yet another retailer. Third, technological benchmarking is a performance-related exercise, where firms attempt to learn-by-imitation from well-performing contacts. Hence, our retailer is particularly keen to develop a learning contact with a high-performing Internet partner (in terms of e.g. new product growth, business process innovativeness or new market entry). This argument is summarized in Proposition 7.

**Proposition 7** (Relative importance of new contacts): In the case of a technology shock (major innovation), a firm is likely to attach more importance to information from a firm that she has new contacts with when: (a) the contacts with this firm are more relevant to obtaining (tacit) technological knowledge, (b) she is more dissimilar to that firm and/or (c) the contact firm is outperforming others on technology-relevant criteria.
Modern Information Technologies and Multi-channel Contact Strategies

So, in times of technological revolution, multi-channel contacts are argued to be more important than their multimarket counterparts (Proposition 6), and new contacts are conjectured to be more important than their old equivalents (Proposition 7). However, technological turbulence comes with anything but multi-channel contact network stability. That is, new developments occur frequently, rapidly and unexpectedly. This implies that a firm must re-assess her multi-channel contact network on a quasi-continuous basis. In the face of rapidly shifting competitive conditions, the new contacts of yesterday may be outdated today, forcing the firm to establish even newer contacts tomorrow. Particularly in the early days of a technological revolution, before a new equilibrium is reached, the quickly changing competitive setting frequently disrupts a firm’s multi-channel contact portfolio. This produces Proposition 8.

Proposition 8 (The disruptive dynamics of new contacts): In the case of a technological shock (major innovation), the rapid shifts in competitive conditions and the associate dynamics of new contacts disrupt a firm’s just-established multi-channel contact portfolio time and again.

This set of three propositions, together with the multi-channel versions of Propositions 1 to 5, suggest an approach that may help to explore how firms develop multi-channel contact strategies for the Internet age. The bottom line is that we expect that in the early days after the introduction of a revolutionary break-through technology the multi-channel learning argument (cf. Proposition 2) dominates over the multi-channel collusion story (cf. Proposition 1) because: (i) technological uncertainty induces an omni-present need for learning, and (ii) the collusion-enhancing conditions are overshadowed by their collusion-impeding counterparts (cf. Proposition 5). Below, we return to this issue of the short versus the long run in a bit more detail. But first, in the next section, we set a preliminary step toward the analysis of multi-channel contact management in the New Economy.

MULTICHANNEL CONTACT MANAGEMENT IN THE NEW ECONOMY

Three Different Revolutions

The impressive period of sustainable economic growth in the U.S. in the 1990s has induced an equally impressive stream of guru-type publications that announce the birth of the New Economy [see e.g. Wired (www.wired.com)]. To emphasize the revolutionary nature of what is happening, the advocates of the New Industrial Revolution promote the New Economy by introducing a
lengthy list of language novelties. Apart from the habit to use capitals, this is reflected in inventing new acronyms (e.g. B2B), in putting a new e in front of well-established words (e.g. e-banking) and in revealing a preference for the new @ symbol (e.g. @li@ncies). As we want to be taken seriously by those in New Economy circles, this chapter fits nicely in this New Tradition.

The key argument is that the modern information technologies (IT) radically alter the ways in which businesses are organized, products are developed and transactions are shaped. The chapter by Kim (this volume) supports this idea by a historical account of how new technologies affected the organization and strategies of U.S. businesses around the turn of the (nineteenth) century. Our chapter focuses on recent changes in information technology, notably the Internet and e-commerce. While Kim’s chapter explores how information changed the market interaction between suppliers and buyers, we focus on the effect of the Internet on interactions among companies. Both chapters have one message in common. Advances in information technology change the structure of the economy toward greater interdependence among economic agents. In the context of the current chapter, we cannot discuss all the details that are so inextricably bound up with this revolution. Rather, we wish to underline what we think is essential. Basically, this involves three different revolutions (van Witteloostuijn, 2001). In a nutshell, our argument is summarized in Fig. 3.

First, the IT revolution that attracts most attention in the (business) press is related to the emergence of the many dotcom firms. This pertains to the rise (and fall?) of new industries, breeding new firms and offering new products, and their impact upon the behavior and design of old industries. The figureheads of this micro revolution are associated with new organizational forms such as network and virtual organizations (e.g. Volberda, 1998), and new information products such as browsers and portals (e.g. Shapiro & Varian, 1999). On top of the birth of such new industries, the micro revolution is said to radically alter the way old industries are organized as modern IT offers ample opportunities to, so to say, re-animate the business process reengineering hype by introducing new efficiency-enhancing and IT-driven coordination, communication and design devices (e.g. Nouwens & Bouwman, 1995). Second, the meso IT revolution is argued to change the rules of the competitive game at the industry level. The key argument here is that advanced IT reduces the cost of economic transactions by providing virtual market places and electronic trading places in new and old industries. In such an on-line environment, demand can meet supply in an efficient and transparent way. The result is the entry of a large number of new ‘cybermediaries’ that facilitate this ‘demand-meets-supply’ process (e.g. Sarkar, Butler & Steinfield, 2000). Third, the IT-driving increase of firm-level efficiency and industry-level effectiveness are the forces,
according to New Macroeconomists, that underly accelerated growth rates, decreased inflation rates and dampened (or even disappearing) business cycles. Therefore, the New E-conomy has brought the macroeconomic paradise to Earth (e.g. Cohen, DeLong & Zysman, 2000). The reason for this is that IT is a break-through technology that produces an impressive productivity jump throughout the economy, so providing the fuel for sustainable macroeconomic prosperity (e.g. Gordon, 2000). Together, that is, the interacting micro and macro revolutions produce a really global macro revolution.

For the purposes of the current chapter, we can restrict the argument to the meso revolution at the industry level. Clearly, the New Economy proponents expect much from the (micro and) meso IT revolution: not only will e-organizing within and between firms increase cost efficiency and reduce transaction costs, but also e-trade will reduce prices as a result of the increased intensity of competition that comes with the transparent e-market places. By way of illustration, we develop an argument as to what the New Economy may imply for the sources and features of multichannel e-contacts in relation to (the multichannel versions of) Propositions 1 to 8. This exercise produces eight hypotheses that set an agenda for future empirical research, and that run opposite to the New Economy communis opinio. That is, after the revolutionary on-line dust has settled down, the Internet revolution may decrease rather than increase the force of competition as a consequence of multichannel e-contact collusion.

The Sources of Multichannel E-contacts

The New Economy is characterized by an impressive acceleration of the already impressive development of alliance networks. By way of example, Figure 4 provides an overview of a knowledge @lliance network in the Internet industry in the September 1998 – July 1999 period.
Clearly, the network formation in the Internet industry is not limited to dotcom firms. Apart from the many Internet firms, with such exotic names as Comone, G-Magic and Fatbrain, a large number of well-established high-tech firms are heavily linked into the Internet knowledge @lliance network. Here, revealing examples are the major electronic companies (from Philips to Sony) and telecom firms (from Bell babies to Nokias). And the Internet network is even extended into other than high-tech industries (such as banking: from ABN AMRO to Citibank). So, the acceleration of @lliance development is not restricted to the IT industries. Figure 5 lists a number of examples of @lliances in ‘old’ and well-established industries, so connecting the Old Economy with the New Economy.

To give some examples from B2B, which stands for “business to business”, and B2C, which is the e-acronym for “business to consumer”: the Deutsche Bank enters into B2B e-banking by teaming up with Internet provider AOL and software producer SAP; Kmart attempts to penetrate the B2C e-tail market by joining forces with the webmaster Yahoo!; an international @lliance of leading retailers (including Dutch Ahold, British Tesco and American Kmart) is set up to organize powerful e-procurement; et cetera.

Clearly, the IT revolution has further increased the contact intensity in many industries through the impressive @lliance network development movement. From the preliminary evidence in Figs. 4 and 5, we suggest Hypothesis 1.

**Hypothesis 1 (Increasing importance of @lliances):** The IT revolution induces the accelerated growth of @lliances network formation, within and across new and old industries.

Additionally, and related to the above, IT has initiated the birth of new contact channels. That is, the electronic world of the Internet is occupied by new organizational forms that organize different channels of inter-firm contact. Here, the key example is the cybermediary (e.g. Sarkar, Butler & Steinfield, 2000). Firms now meet in such electronic environments as e-auctions, e-malls and e-platforms, on top of and in addition to their traditional non-electronic contacts. These e-contact devices increase the number of different contact channels. Of course, the motives for innovative e-contact development and @lliance network formation may be anything from sharing e-customer bases and combining complementary e-capabilities to e-product development and chain e-management. However, in line with Proposition 1 and the preliminary evidence in Figs 4 and 5, we suggest an important additional effect of the increasing incidence of @lliances and other e-contacts. This is Hypothesis 2.
Fig. 4. An @lliance Network in the Internet Industry (September 1998–July 1999).
Fig. 5. Examples of @li@nces Connecting the ‘Old’ with the New Economy.
Hypothesis 2 (Increasing collusion through e-contacts): The extension of the number of multichannel contacts and the expansion of the range of different contact channel opportunities, including e-commerce and cybermediaries, increase the incidence and sustainability of collusive conduct.

The argument underlying Hypothesis 2 is standard multimarket or multichannel contact theory, relying on the reputation device (the multichannel version of Proposition 3) and retaliation power (the multichannel variant of Proposition 4) stories, that is likely to be applicable to what might happen in the New Economy’s long run (see below). This argument is supported by the firm asymmetry suggested by Figure 4, which according to Proposition 4 enhances the opportunities for sustainable multimarket collusion.

The Features of Multichannel E-contacts

Apart from the increase in the number of contacts and the expansion of the range of different channels, the emergence of a ‘virtual’ business world, next to and on top of the good-old physical one, may well change competitive conditions and channel features. Table 1 offers a list of six examples of changing competitive conditions and ditto channel features. Thinking through the consequences of this set of six examples implies the application of Proposition 5 to the New Economy case.

On the one hand, the growth of the New Economy stimulates a restructuring within and across industries. First, the merger between AOL and Time Warner symbolizes the current M&A wave that affects many – if not all – parts of the economy, which increases industry concentration. From game theory, we know that the sustainability of a collusive (multimarket) arrangement correlates positively with industry concentration (e.g. Bernheim & Whinston, 1990). Second, many old firms diversify into new electronic markets, as is revealed by the examples in Figs. 4 and 5. Much empirical multimarket contact studies have produced evidence that diversification is positively associated with collusion (e.g. Scott, 1989). Third, by its very nature, the virtual world is global as national

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<th>Changing competitive conditions</th>
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<td>E-globalization</td>
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boundaries are meaningless in cyberspace. So, separate national markets integrate in the global Internet world such that the number of cross-border contacts increases substantially, which facilitates the emergence of multicontact collusion (e.g. van Witteloostuijn & van Wegberg, 1991). This reasoning produces Hypothesis 3.

_Hypothesis 3_ (Collusion-enhancing e-competitive features): The e-concentration, e-diversification and e-globalization movement that is so inextricably associated with the New Economy increase the incidence and sustainability of collusive conduct.

On the other hand, the virtual world changes the nature of contact. E-contact channels may be associated with features that are rather different from those linked to 'traditional' contact sources. Here, three examples are particularly revealing. First, high speed is a key characteristic of the Internet world. To make contacts and to execute transactions is easily and quickly done in Internet space, compared to the old-fashioned non-electronic world. Moreover, the transparancy of the electronic meeting places is much larger, on average, than the transparancy of the non-virtual world. Together, the increased e-speed and e-transparancy facilitate the immediate detection and punishment of a collusion-breaking cheater. Pre-modern and modern IO has produced the robust result that the opportunity to quickly and effectively detect and punish a cheater is very helpful in sustaining any cartel-like arrangement (Tirole, 1988). On top of this, the New Economy is – for the time being, at least – associated with an abundance of uncertainty as everybody starts to 'interact' with everyone (cf. Figs 4 & 5) without a clue about how long all this will take, which is typical for interaction in an era of technological revolution. Since uncertainty about the duration of interaction is equivalent to the infinite horizon condition, which is a key facilitator of cooperation in an iterative game setting (Rasmusen, 1990), e-uncertainty helps to sustain collusive conduct. This argument is summarized in Hypothesis 4.

_Hypothesis 4_ (Collusion-enhancing e-features): The e-speed, e-transparancy and e-uncertainty-enhancing features of the new e-contact channels increase the incidence and sustainability of collusive conduct.

Of course, Hypotheses 1, 2, 3 and 4 fail to tell the full story. In this context, Proposition 5's list of multimarket (or multicontact, for that matter) collusion contingencies suggests that the old multicontact collusive arrangements may well break down, as hinted at above, in the new economic short or medium run. After all, in many new industries or markets – as is clear from, for example, the endless list of NASDAQ stories about dotcom failures – firm-level survival chances may
well be low, market growth tends to be associated with negative profitability, managerial continuity is quite rare, ownership stability is often absent and strategic homogeneity is the exception rather than the rule. In response, three arguments can be put forward. First, the above story is unlikely to be valid in old industries – to the contrary – in which well-established firms add e-contacts to their existing multichannel contact portfolio. Second, Hypotheses 3 and 4 reflect ceteris paribus predictions that, together with the above counterforces, suggest a subtle balancing act that may tip either way, depending upon the strength of the opposing forces in specific settings. Third, the collusion-disruptive forces may well be the temporary labor pains of the early stages in an industry’s life cycle. Following this line of argument, Hypotheses 3 and 4 particularly relate to the New Economy’s long-run equilibrium state.

*Learning Through Internet and E-commerce*

So far, the argument is basically restricted to the New Economy application of the static version of multichannel contact theory. The next question is what the emergence of the New Economy does to multichannel contact strategies in a dynamic context – i.e. multichannel contact learning – which relates to Proposition 2, as well as Propositions 6 to 8. In the New Economy, this dynamic perspective is crucial. After all, the Internet has, and will have, profound effects on technological developments, market structures and business processes. This calls for strategic (re)actions, both from new and from old companies, which involves much e-learning. As a result, the New Economy increases the demand for information so as to facilitate such learning processes. Here, firms can draw on their contact network for information about new events, interpretations and expectations. This is the imitation, innovation and legitimation effect of multichannel contact, which is particularly important in the uncertain times of technological revolution.

There are many conjectures as to the effect of the New Economy on markets, processes and technologies. A number of key ‘traditional’ constraints in the market lose their relevance (Shapiro & Varian, 1999). Information products can be distributed without capacity constraints. Transactions can be conducted independent of locations, across traditional country and industry boundaries. Internet-based information transfer is timely, detailed and easy-to-access. Web browsers are considered to be an effective and user-friendly interface for intermediating between information users and information sources. As a result, information costs fall, especially the costs of distributing and decoding information (i.e. the costs of gaining access to information). Once diffusion of the Internet network exceeds a certain threshold, these falling information costs
may be expected to stimulate economic growth (see Dudley, 1999, for a general model). If transaction costs fall, this will stimulate the further division of labor. Internet produces new patterns of cooperation between people in different countries and time zones. With increased possibilities for cooperation, they can specialize, which raises the division of labor. With various constraints on economic transactions and labour divisions relaxed, new opportunities arise. To explore these opportunities, companies experiment with new business models and competitive strategies. This e-experimenting is a vehicle for e-learning, which may well benefit from exploiting multichannel (e-)contact portfolios. So, the multichannel (e-)contact version of Proposition 2 is likely to gain even more relevance in the New Economy.

A fundamental change, such as the Internet surely is, calls for players to develop new ‘theories of the world’. This refers to an important cognitive aspect of corporate culture: culture as beliefs, as an understanding of how the economy works, and culture as beliefs about where your company stands relative to rivals. A company is a learning environment that offers a conceptual framework which guides and coordinates decision making by her employees and managers (Loasby, 1994). Basic innovations, such as the Internet, throw these corporate cultures into crisis. The solution to this is an intensified search for new theories – in other words: learning. Hence, contacts are more important now than ever. In order to get access to new ideas, firms should not limit contacts to their traditional rivals (multimarket contact) or partners (network contacts). This suggests that basic innovations weaken the link between multimarket contacts and competitive moves. As a corollary of Proposition 6, this suggests Hypothesis 5.

Hypothesis 5 (Decreasing importance of multimarket contact): In the New Economy, the importance of multimarket contact decreases in favor of multichannel contact.

So, new contacts are a major source of new information in the New Economy. However, what kind of information are companies and their managers looking for? Obviously, data about stable equilibrium states are not a key issue in the New Economy. Rather, firms and their managers need to understand new and dynamic processes. They are interested in expectations and understandings of new kinds of relationships between economic players, including the behavior of new e-players. Meaningful, profound changes must be distinguished from opportunistic experiments and uninformed herd behavior. Slow movers may be paralyzed, or may be preparing thoughtful actions. Many mega-mergers, deep-cutting divestitures and major reorganizations are attempts to cope with the new uncertainty. These change processes contain learning behavior that is
constrained by bounded rationality and political behavior. Information is impacted by proselytizing behavior and advocacy practices. Information is a source of change power. Information channels play different roles in this regard. Communication tends to provide information in a two-way exchange setting. Contact may therefore increase predictability. In a time-honoured way, the next step may be collusion, where communication serves to stabilize environments.

One aspect that companies need to reassess in this New Economy, is their optimal scope. The firm's productive resources, scope economies and competitive patterns determine her scope. The Internet leads to new forms of multimarket scope, revealing examples being the emerging combinations of telecom and datacom or new and old media firms. Basically, organizations face a choice between, on the one hand, being a pure Internet firm or pure 'physical' (so-called brick-and-mortar) firm and, on the other hand, becoming a combined Internet-physical (so-called click-and-mortar) organization. For efficiency reasons, John Hagel III and Marc Singer (1999) argue in favor of unbundling established companies into separate firms for customer relationship management, product innovation and infrastructure management. In the case of airlines, for example, this would suggest a merger of brands (like, say, Air Italia, British Airways and KLM), while simultaneously outsourcing many operations (as already occurs in the case of ground handling and airplane maintenance).

These outsourcing strategies may create many new forms of contact. For example, the new unbundled firms may share the same bank and the same supplier. Additionally, the new alliances formation might influence the extent of a firm's multimarket scope. In a networked environment, the firms' opportunities increase to learn from each other and to exchange signals. A case in point is, again, the airline industry. In this industry, many formal networks operate side by side. If Air France would meet KLM in one market and Northwest in another, is this a multimarket contact? If we look at the level of alliance networks (where KLM and Northwest are partners), an affirmative answer is appropriate; if we look at individual firms, the answer must be negative. In the former case, if the networks are strong, alliance networks are complementary to multimarket contact. If the latter case holds, which occurs when the information-transmitting and coordinating power of the network is weak, firms may merge instead so as to increase their multimarket contact. In the New Economy, networks are gaining importance, and so do network contacts (next to and on top their firm-level counterparts). Overall, the above argument suggests Hypothesis 6, which provides further detail to Hypothesis 5.

**Hypothesis 6** (New contact sources): In the New Economy, increasing vertical unbundling and network formation are associated with the emergence of many new sources of contact.
The emergence of new contact sources is one thing, but using those new contacts effectively is quite another matter. In re-assessing their scope in the New Economy, firms may imitate the behavior of firms with whom they have a high amount of technology-relevant contact, with firms who are dissimilar to her and/or with firms who are technologically successful (cf. Proposition 7). However, bad friends may have the wrong influence. Firms may hesitate in learning from newcomers when they have a well-established high multichannel (or multimarket, for that matter) contact with firms who have a stable pattern of decision making about scope, entry, exit and/or pricing. So, by the end of the day, those firms who attach greater weight to developing new contacts may outperform their counterparts who stick to their old contact network partners. This produces Hypothesis 7, which is a corollary of Proposition 7.

Hypothesis 7 (New versus old contacts): In the New Economy, those firms who develop a new multichannel contact portfolio and who attach more weight to their new contacts, are likely to outperform their counterparts who hang on to their ‘old’ and well-established multichannel contact network.

To argue that, in the New Economy, new contacts emerge (Hypothesis 6) that leapfrog old contacts in importance (Hypothesis 7) might suggest a move toward a new stable equilibrium. However, nothing can be more beside the mark. In the turbulent and uncertain early days of the Internet revolution, the apparent status quo is a moving target. In this context, in line with Proposition 8, we can add a number of effects of e-commerce on the dynamics of market behavior in the New Economy. Clearly, the New Economy is inextricably bound up with shifting competitive conditions. And related to this, the New Economy produces newness in all corners of the business world. Below is a revealing, but incomplete, list of examples.

- New players are entering. Companies re-arrange their product portfolio, foreign companies enter through virtual portals, and newly created e-companies penetrate cyberspace.
- New transaction systems are introduced. New cybermediaries help to reduce the cost of e-transactions, new on-line auctions facilitate market efficiency, and electronic payment services reduce the customers’ barrier to engage in B2C purchasing.
- New value chains are designed. Manufacturers may cut out traditional distribution intermediaries, suppliers may focus on interaction with customers, and firms may outsource production while using fewer subcontractors.
• New multirental scope strategies arise. As argued above, many firms re-assess their multirental scope, merging horizontally, unbundling vertically and allying diagonally.
• New information channels are installed. Electronic feedback from customers deepen and enrich a company's information, enabling her to design quick and tailor-made responses to customer-specific events and features.
• New business models are invented. The introduction of Internet and Intranet offers opportunities to re-design business processes, both within and across organizations, so as to improve efficiency and effectiveness.
• New product strategies are implemented. Information products, with their unique combination of features (such as low marginal production costs, high switching costs, powerful lock-in effects and significant network externalities), ask for different strategies in terms of e.g. product versioning, price discrimination, property rights and complementary bundling.
• New competitive rules of the game are developing. As a result of any (combination) of the above new ways doing business, industries may well be confronted with new competitive games, either by moving from collusion to competition or *vice versa*.

The bottom line is that the above and many other new developments imply that the dynamics of competition in the New Economy are impressive. Partly, this is the result of the very nature of the Internet technology. That is, the electronic speed and transparency of information travel reduce the ability to keep sources of competitive advantage secret for very long. It induces firms to protect their sources of competitive advantage (intellectual property rights) by patents and copyrights. If that fails, conditions of hypercompetition occur (Gimeno & Woo, 1996). In the New Economy, as a result, competitive advantages tend to have a short life cycle (which defines hypercompetition) as information travels fast, is easy to replicate and distribute, and difficult to protect. In the context of the multirental contact perspective, this story points to the necessity to frequently re-assess any multirental contact portfolio. After all, what might be a central and promising new contact today may well be relegated to the periphery of competitive irrelevance tomorrow. This suggests Hypothesis 8 as the New Economy complement to Proposition 8.11

**Hypothesis 8** (disruption of multirental contact portfolios): In the New Economy, the rapid development and diffusion of new ways of doing e-business, together with the associated competitive e-dynamics, disrupt a firm's just-established multirental contact portfolio time and again.
Multichannel Contact Management in the New Economy

The above argument offers a first step toward the analysis of multichannel contact management in the New Economy – and nothing more. After all, multichannel contact management must deal with a number of key issue at the portfolio level, too. Here, Fig. 2 offers a stepping stone for a tentative reflection. Below, by way of wrap-up, we reflect briefly on the five different elements of our multichannel contact framework.

1. **Channel sources.** The immediate implication of the New Economy is the emergence of additional e-channel sources, apart from the accelerated @i@nce network formation (Figs. 4 & 5). For instance, the many e-trading websites offer a direct contact channel that operates next to or instead of the traditional market places. Moreover, cybermediaries, which help firms to smooth their transaction conduct in an electronic world of information overload, are clear examples of additional indirect e-contact channel sources.

2. **Channel features.** Next to and on top of the e-speed, e-transparancy and e-uncertainty features of Internet contact (Table 1), with their likely effect of enhancing (the sustainability of) multichannel collusion, the new e-channels may either complement or replace current non-Internet channel sources, so stimulating a re-assessment of the effectiveness of a multichannel contact portfolio. In the context of this re-assessment exercise, the relative direct and indirect cost of developing and maintaining e-contact channels must be taken on board. For instance, the management of an @i@nce network may absorb so much energy and time that the firm can dispose of an inefficient cross-shareholding portfolio, because the @i@nce network is an effective substitute for the cross-shareholding contact channel.

3. **Channel purposes.** The issue of the e-channel purposes is reflected in Hypotheses 1 to 8 above. Clearly, the primary objectives of collusive e-conduct and across-firm e-learning operate side by side the secondary aims of developing and sustaining e-reputation device and e-retaliation power, the latter twin being instrumental in reaching the former couple. Here, the argument produces e-versions of Propositions 1 to 4.

4. **Channel externalities.** A key question is whether the new Internet technology will prove to be either a conformity-stimulating or variety-producing shock. On the one hand, the Internet, and the many associated contact networks, may facilitate across-firm imitation, so enhancing the new technology’s conformity-enhancing legitimation. On the other hand, the world of e-contact may offer ample opportunities to develop innovative e-novelties, thus producing competitive variety.
5. **Channel management.** The New Economy’s Internet break-through technology is inextricably bound up with many uncertainties, which offers an exciting challenge to multimarket contact channel management. From an external environment perspective, many—if not all—firms face the need to re-asses their channel selection and network building strategies, taking on board the new threats and opportunities in the e-world. From an internal organization angle, many firms are just starting to explore such issues as electronic process guiding and *ditto* partner lending.

Fair enough, the above reflection is only a first step toward an in-depth exploration of multichannel contact management in the New Economy, being associated—for the time being—with asking interesting questions rather than providing definitive answers. As a second step, the next section introduces a tentative empirical investigation of the case of the diffusion of Java software so as to put empirical flesh on the theoretical bones of a selection of the issues that are associated with the multichannel contact framework.

*A Case: the Diffusion of Java*

Java is a programming language that has become popular for Internet applications. Sun developed Java in the early 1990s, initially as a tool for interactive television applications. In 1994, Sun relaunched Java for the world wide web. Its diffusion has been very fast, and it is widely used now as something close to a *de facto* standard for Internet programming. Computer makers are among the companies who needed to adopt Java for their software and *e*-commerce applications. For the short Java case below we used data from the Dutch IT journal *Automatisering Gids* (their latest CD-rom data set covers the period from August 1994 to September 1999). We determined the timing of the computer makers’ adoption of Java by looking at the alliances they engaged in that explicitly refer to Java, as well as to product announcements that relate to Java. The results that we report here are very preliminary. The only message we would like to bring home in this section is how (part of) the multichannel contact perspective can be applied to a real-world case that is related to the New Economy of IT and Internet. A rigorous empirical study will have to be a second step, as is the application of the full multichannel contact framework. That is, the analysis below is, basically, restricted to the *incidence* of multimarket and multichannel contact, ignoring the consequences of such contact. Taking the latter on board requires additional data collection as to the conduct and performance of the firms operating in the Java network.
Table 2. Twelve Firms Announcing @lliances with a Java Basis.

<table>
<thead>
<tr>
<th>Company</th>
<th>Country</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Business Machines (IBM)</td>
<td>U.S.</td>
<td>December 15 1995</td>
</tr>
<tr>
<td>Apple</td>
<td>U.S.</td>
<td>March 22 1996</td>
</tr>
<tr>
<td>Hewlett-Packard</td>
<td>U.S.</td>
<td>May 10 1996</td>
</tr>
<tr>
<td>Digital Equipment Corporation (DEC)</td>
<td>U.S.</td>
<td>May 24 1996</td>
</tr>
<tr>
<td>Mitsubishi</td>
<td>Japan</td>
<td>May 24 1996</td>
</tr>
<tr>
<td>Motorola</td>
<td>U.S.</td>
<td>May 24 1996</td>
</tr>
<tr>
<td>Olivetti</td>
<td>Italy</td>
<td>May 24 1996</td>
</tr>
<tr>
<td>Toshiba</td>
<td>Japan</td>
<td>June 7 1996</td>
</tr>
<tr>
<td>Compaq</td>
<td>U.S.</td>
<td>August 26 1996</td>
</tr>
<tr>
<td>NEC</td>
<td>Japan</td>
<td>May 31 1997</td>
</tr>
<tr>
<td>Siemens</td>
<td>Germany</td>
<td>August 15 1997</td>
</tr>
<tr>
<td>Fujitsu</td>
<td>Japan</td>
<td>October 10 1997</td>
</tr>
</tbody>
</table>

As a stepping stone for our analysis, Tables 1 and 2 provide relevant Java-related information. It is clear from both tables that IBM was the first adopter of Java, after the inventor Sun. It is widely believed that IBM has currently more programmers working on Java, in her San Francisco project, than Sun herself. We may then raise the question what has determined the sequence of the subsequent adopters. To see that, we looked at all reported cooperative moves (in the data source mentioned above) by the companies listed in Tables 2 and 3. The result is provided in Table 4 (cf. Hypothesis 1).12

Comparing this Table 4 to Tables 2 and 3 makes clear that, roughly, the computer companies who cooperate frequently with IBM (Apple, HP and DEC), were the ones who rapidly followed IBM’s adoption of Java. Some companies who had few cooperative links with IBM also were relatively late to adopt Java – notably NEC, Siemens and Fujitsu. There are some anomalies, though, as

Table 3. Companies That Sell Products Using the Java Standard.

<table>
<thead>
<tr>
<th>Company</th>
<th>Year</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM</td>
<td>1996</td>
<td>Minicomputers and higher OS</td>
</tr>
<tr>
<td>Mitsubishi</td>
<td>1996</td>
<td>(Set-top box for) TV with Internet access</td>
</tr>
<tr>
<td>Hewlett-Packard</td>
<td>1998</td>
<td>Mobile phone / PDA Internet access</td>
</tr>
</tbody>
</table>
Table 4. Number of IBM-Based Cooperative and Standard-Setting Events.

<table>
<thead>
<tr>
<th>Company</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>23</td>
</tr>
<tr>
<td>Hewlett-Packard</td>
<td>29</td>
</tr>
<tr>
<td>Digital Equipment Corporation (DEC)</td>
<td>17</td>
</tr>
<tr>
<td>Mitsubishi</td>
<td>3</td>
</tr>
<tr>
<td>Motorola</td>
<td>6</td>
</tr>
<tr>
<td>Olivetti</td>
<td>1</td>
</tr>
<tr>
<td>Toshiba</td>
<td>3</td>
</tr>
<tr>
<td>Compaq</td>
<td>10</td>
</tr>
<tr>
<td>NEC</td>
<td>5</td>
</tr>
<tr>
<td>Siemens</td>
<td>4</td>
</tr>
<tr>
<td>Fujitsu</td>
<td>4</td>
</tr>
</tbody>
</table>

Mitsubishi, Motorola and Olivetti were fast followers without having that many cooperative links with IBM. For a fuller picture, we therefore need additional information about multimarket and multichannel contact events.

To collect more information about multimarket contact, we used the Worldscope CD-rom which contains information about firms and their industries. For IBM, this source lists the following markets (four-digit SIC codes): 3570, 357, 3571, 3575, 7372 and 7378. All firms selected are computer firms, and are thus active in the SIC-code 3571 industry (which refers to "electronic computers"). Table 5 reveals the resulting multimarket contacts within our sample of computer makers.

In absolute terms, Compaq has the greatest multimarket contact overlap with IBM (in five industries), closely followed by Apple, Digital and Olivetti (three markets each). In relative terms, Compaq's lead is even larger (contact in five of her six markets). Sun has contacts with all companies listed in the single industry she is recorded to be active in (with the SIC code 3571). Thus, she does not have multimarket contact with these companies (at the four-digit SIC level).

Comparing the alliance contacts in Tables 2 and 4 to the multimarket contacts in Table 5 suggests that the alliance data much better explain what is happening in the business world of Java software than the multimarket contact data – i.e. why Apple and Hewlett-Packard were swift to follow IBM in adopting Java, compared with Compaq. On the one hand, Apple and Hewlett-Packard had a higher alliance contact incidence with IBM than Compaq. On the other hand, they did have less multimarket contacts with the central Java-player IBM. This is consistent with Propositions 6 and 7: since Java is a technological
phenomenon that plays an important role in the Internet revolution, alliance contacts are more relevant to firms, particularly those with the leading Java-applying pioneer IBM, than are multimarket contacts. Additionally, our preliminary findings suggest that multi-alliance and multimarket contacts are probably viewed as substitutes rather than complements (cf. Fig. 2). Multimarket contact may have an effect, of course, specifically when alliance contacts are very limited. For example, Olivetti was relatively quickly involved in Java (see Table 2), but she has only one alliance with IBM and only one with Sun (see Table 4). But she does meet IBM in three different markets. Fujitsu’s relatively late adoption of Java (in late 1997) is consistent with both her low alliance contact (four alliances) and her low multimarket contact (one market out of her five industries) incidence with IBM.

**APPRAISAL**

Multimarket contact theory envisions competition as a subtle multi-level play, where multiple players coordinate their moves over different playing fields. For one, this kind of competition does have high informational requirements. We suggest in this chapter that the theory of multimarket contact needs to be re-assessed, with greater emphasis than before on the informational and expectational conditions of contact, reputation building and coordinated decision making. Additionally, and related to the above, forms of contact other than
through market competition may also communicate strategic intent. Networks may coordinate pricing in novel ways by creating new forms of contact and overlapping scope. Alliances and shared suppliers, such as consultants and financiers, may also act as conduits of information. This suggests a multichannel rather than multikernel contact perspective. In this context, we know little about the relative importance of various contact channels for the learning that goes on in firms. Contact is important in situations where firms need more information than they can get from analyzing the raw data that can be derived from observing a market (business intelligence). Here, by way of illustration, we have discussed the cases of the New Economy, which – in all likelihood – increases the relevance of a multichannel contact perspective, and the business world of the Java programming language. Hopefully, our chapter may contribute to developing such a multichannel contact approach of corporate and business strategy.

NOTES

1. To avoid disappointment, we would like to remark that this chapter is an explorative, and hopefully thought-provoking, essay. That is, the aim is to offer stepping stones for future research by: (i) developing a multichannel contact framework, and (ii) applying the argument to the New Economy case. So, as yet, we neither propose a mathematical model nor offer an econometric test.

2. For the sake of parsimony, Proposition 1 ignores nonlinearities. On this, Stephan and Boeker (this volume) offer interesting insights.

3. Phillips and Mason (this volume) present an interesting experimental study that focuses on competitive learning through a player who horizontally connects two separate (duopoly) markets.

4. An important aspect of this learning perspective on multikernel contact is that firms must be free to experiment in individual markets. In this context, arbitrage trade, economies of scope or scale, network economies or other basic conditions may place constraints on a firm’s behavior in an individual market, which would reduce the freedom for firms to experiment in that market. But if such restrictions are not binding, then higher multikernel contact is associated with more opportunities to learn from each other as to how the competitive game can be played. This, in turn, increases the chance that the firms involved are able to establish an equilibrium in which they avoid disruptive competition. The effect of such competitive learning behavior are higher prices and higher profits. These high prices and high profits need not reflect the presence of (tacit) collusion, though. They may instead point to the absence of aggressive price cutting as a result of firms jockeying for position. This interpretation, then, challenges the view that the positive impact of multikernel contact on prices and profits reflects tacit collusion per se.

5. As an important side effect, IO’s multikernel game theory repairs another shortcoming of much IO: in a multikernel setting, the threat of potential entry is no longer an anonymous deus ex machina, as is the case in the majority of entry threat games (Gilbert, 1989), but rather takes the shape of a potential entrant with a face. This offers
promising opportunities in the context of the welfare-theoretic analysis of competition by providing a multimarket interpretation of perfect contestability (van Witteeloostuijn, 1992).

6. So, much of IO's multimarket collusion modeling is a natural extension of industrial economics' well-established single-market cartel theory that has produced a list of cartel-enhancing and cartel-disrupting conditions. Scherer and Ross (1990) offer an insightful textbook treatment of this subbranch of IO.

7. Arm-length forms of contact are likely to be less efficient information conduits than internal information conduits, though. This may be one factor why a firm might prefer a merger to an alliance. This is an issue that lies beyond the scope of the current chapter.

8. Perhaps New Economy prophets follow pop musicians (e.g. U2), when they play around with letter and number symbols.

9. Phillips and Mason (this volume) offer an in-depth treatment of this issue of indirect multimarket contact.

10. This relates to the entry mode issue (cf. Stephan & Boeker, this volume).

11. For the sake of brevity, the argument does not distinguish new from old firms. This is not to say that this distinction is irrelevant. For example, new forms of collusion can very well appear in new industries. New Internet companies need to build up reputations. Since their position in output markets is still very new, they may derive reputation from their inputs rather than from their outputs, such as well-known top managers, employees, investors or owners. This implies a bias of their multichannel contact network formation to developing and maintaining input links.

12. Note that these cooperative moves occur partly after the firm concerned adopted Java. This is one of the weaknesses that must be improved upon in the context of a rigorous empirical study.

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REFERENCES


