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The Social Embeddedness of Transactions: Evidence from the Residential Real-Estate Industry

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Information and communications technologies (ICT) are becoming pervasive in the residential real-estate industry and their usage is affecting the work lives of real-estate agents. Drawing on data from a regional study of the residential real-estate industry in the United States, we focus on the disintermediation or, more accurately, the reintermediation of real-estate agents in the sales process. Using data collected from interviews, direct observation, and archival records, we examine how real-estate agents are (1) taking advantage of new ICT in their work, and (2) protecting themselves from others wishing to displace their position in the real-estate value chain. Our analysis of this activity draws on two contrasting theoretical perspectives to illuminate the roles of residential real-estate agents: transaction cost and social capital. The results of this study provide insights into the ways in which ICT are used to build and draw on the social relationships that underpin the actual transactions, to help guide the process of buying/selling a house, and to invoke expertise as needed.

Keywords coordination theory, disintermediation, electronic commerce, field study, information and communication technology, real estate, reintermediation, social capital, transaction-cost economics

Numerous pundits, professional research firms, and scholars from a range of disciplines predict that the increased use of electronic commerce[1] will reshape virtually all industries. One phenomenon that has attracted special attention, and motivates us to write this article, is *disintermediation*: the potential that buyers and sellers will find each other directly, rather than through intermediaries (e.g., Wigand, 1997b). Indeed, some writers go so far as to predict that the widespread adoption of electronic commerce will lead to the disappearance of all human "agents" who "merely" serve to help buyers find sellers (Bakos, 1998; Doherty, 2000; Hess & Kemerer, 1994; Schmitz, 2000).

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Predictions of disintermediation seem to have been borne out in certain industries (e.g., Benjamin & Wigand, 1995; Hess & Kemerer, 1994; Wigand, 1997a). For example, conventional travel agencies are struggling to survive the double blow of airline commission cuts and heightened competition via online services (Lewis et al., 1998; Lewis & Talalayevsky, 1997). Data show that the number of people booking travel online is increasing rapidly. According to the Travel Industry Association, the number of U.S. customers booking travel online increased by 62.1% between 1997 and 1999. According to Jupiter, online travel sales are projected to quadruple to $16.6 billion by 2003 (Travel agents threatened, 1999). Dozens of travel-oriented sites, such as Expedia, Preview, and Travelocity, have sprung up since 1995. Also, airlines increasingly sell tickets directly on their web sites or through wholly owned outlets, such as Orbitz. Concurrently, airlines have drastically decreased the compensation provided to travel agents as they rush to take advantage of direct distribution channels such as the Internet. Perhaps as a result, even though people are traveling more than ever before, the number of travel agencies is steadily declining (Travel agents threatened, 1999). Between 1997 and 1999, the total number of travel agencies in the United States dropped 8.2% (Battey, 2000). A more recent source reports that in 1996 the United States had about 47,300 travel agents and this number dropped 18%, to about 39,000, in 2000 (Perotin, 2001).

Disintermediation seems to be an emerging possibility in the insurance industry as well. Insurance sales practices have traditionally relied on agents to connect buyers with products, but this situation is beginning to change as insurance companies look to information and communication technologies (ICT) to reach buyers directly. Some major national insurance firms are presently luring customers via the Internet (Fisher, 2000). For example, Allstate Insurance announced plans to sell insurance directly via phone and Internet while laying off 4000 employees (Allstate to lay off, 1999; Lohse, 1999).

Despite the apparent accuracy of the disintermediation prediction in these industries, there is growing realization that the actual process can be quite complex and that the situation will vary from industry to industry (Grover & Ramanlal, 1999; Schmitz, 2000). To explore the phenomenon of disintermediation as a result of electronic commerce, we examine the U.S. residential real-estate industry. Residential real-estate agents are pure market intermediaries (connecting buyers and sellers but rarely buying and selling themselves), like travel agents and insurance agents. This suggests that, like travel and insurance agents, the position of residential agents as pure market intermediaries is potentially threatened when ICT provide new ways for buyers and sellers to find one another (Neches et al., n.d.).

Real estate is a much more complex and expensive good than either a plane ticket or an insurance policy. For this and other reasons explained later, the roles agents play in the residential real-estate industry provide a useful lens to explore the disintermediation process. To frame this exploration, we contrast two perspectives on disintermediation: a transaction-cost perspective (e.g., Wigand, 1997a; Williamson, 1981) and a social-capital perspective (e.g., Baker, 1984; Burt, 2000; Tsai & Ghoshal, 1998). The first perspective focuses on the cost of individual transactions under different governance mechanisms. The second perspective focuses on how transactions are embedded in and affected by their social context and the network of relations that make up this context.

We chose transaction-cost economics for our analysis because many contemporary analyses of electronic commerce have focused on the costs of carrying out transactions under different circumstances, specifically with and without electronic support (Choudhury, 1997; Choudhury et al., 1998; Grover & Ramanlal, 1999; Hess & Kemerer, 1994). These works often draw on the transaction-cost framework proposed by Williamson (1981). We use the generic market coordination structures described by Malone and Smith (1988) to profile the role of the agent in the real-estate process.

As a contrasting perspective we chose one that views transactions as embedded in and affected by a network of social relationships (Granovetter, 1973, 1985; Hansen, 1999; Krackhardt, 1990; Krackhardt & Stern, 1988). Crowston et al. (2001), Sawyer et al. (1999), and Crowston and Wigand (1999) have conceptualized real-estate business as an economic activity set within social structures that the agents help to develop. The networks of relationships among agents, buyers, sellers, myriad real-estate professionals, and others shape the behavior of the agent, buyer, and seller and provide the inputs necessary for the completion of a real-estate transaction. In this analysis, we draw on the notion of social capital, that is, the set of resources embedded in relationships (Burt, 2000; Tsai & Ghoshal, 1998). A social-capital perspective constitutes real-estate as a process of using one's relationships with others to draw on their information to complete a transaction. This process requires a series of negotiations that arise out of, and are structured by, interpersonal ties among participants linked via social networks.

The article continues in five sections. In the first section we briefly review literature on the two perspectives just introduced and consider how they can be applied to the real-estate industry. We follow this discussion by introducing our research setting. In the third section we outline our research approach, data collection, and data analysis. In the fourth section, we present the findings from our fieldwork, both descriptive and interpretive. We conclude by comparing the implications of the two perspectives for further

research on electronic-commerce-driven disintermediation and for the practice of market intermediaries more generally.

THEORETICAL PERSPECTIVES ON ICT USES IN RESIDENTIAL REAL ESTATE

In this section we present two perspectives on ICT use. The first perspective focuses on the cost and economics of transactions, the second on how transactions are embedded in and affected by their social context. One difference between these two perspectives is the way they conceptualize information. The transaction-cost perspective presents information as discreet and relocatable, while the social-capital perspective sees information as intimately embedded within the minds of people and shaped by the ties that make up their social network.

A second difference between the two perspectives is in their representation of the social context. By social context we mean the larger milieu in which the phenomena of interest occurs, and the temporal, physical, and behavioral elements that shape action. The transaction-cost perspective deemphasizes the social context, so we label this a *socially thin* perspective. Conversely, because of its explicit consideration of the context, we label the social-capital perspective as *socially rich*. The former lends itself to a functional perspective and the latter to an interpretive one for comparison purposes.

By drawing on two perspectives, we explicitly recognize that both offer unique and valuable insights into an industry's core processes. However, consideration of relational factors such as social capital has been tangential at best in contemporary studies of economic activity in general (Granovetter, 1992; Swedberg, 1994) and electronic commerce activity in particular (Schmitz, 2000). Moreover, given the differences in the two perspectives, using both approaches provides a more conceptually complete and balanced picture of the role of transactions, their relation to social context, and the set of actions involved in the residential real-estate industry.

Transaction Costs—A Socially Thin Perspective

The basic concepts underlying transaction-cost economics were developed by Coase (1937) and further refined by Williamson (1981). The fundamental unit of analysis in transaction-cost theory is a transaction, defined as the transfer of property rights. Research in this perspective typically considers which governance mechanism—typically a market or a hierarchy—is the least costly way to carry out a transaction. Under market governance, a search is made for the lowest cost supplier each time a particular good is acquired. For example, an organization needing some commodity parts might request bids from potential suppliers whenever a supply is needed. Hierarchical governance means that the goods are made within the organization, allowing for hierarchical (i.e., managerial) control of their manufacture. For example, an organization might own the equipment and employ the workers needed to manufacture subcomponents of its product.

Transaction costs include all resources that have to be sacrificed in order to arrive at a mutually acceptable agreement for the exchange of goods and services between two or more parties (Wigand et al., 1997). It is possible to identify at least four different types of costs (Wigand et al., 1997):

- Contact costs (such as searching for information).
- Contracting costs (such as negotiating and formulating a contract).
- Monitoring costs (such as checking quality, quantity, prices, deadlines, maintaining secrecy).
- Adaptation costs (such as changes during the validity of the agreement).

These transaction costs are assumed to be lower for hierarchical governance, since it is not necessary to search for a supplier or negotiate a new contract for each purchase, and there is no possibility of "holdup" in case changes are needed in the contract. Set against these transaction costs is the cost of the asset itself. It is expected that the cost of the asset will be least when it is acquired in the market because it is likely to be bought from the lowest cost supplier. The choice of governance mechanism depends on the balance between these costs.

To determine the balance for a particular transaction, it is necessary to take into account the particulars of the transaction. According to the transaction-cost approach, transactions may be differentiated in many ways. Such transaction attributes may include (i.e., see Milgrom & Roberts, 1992; Wigand et al., 1997) the:

1. *Specificity* of the asset involved in the transaction (defined as the difference between the best and second-best use of the asset).
2. *Frequency* with which similar transactions occur.
3. *Duration* or period of time over which transactions are repeated.
4. *Complexity* of the transaction.
5. *Uncertainty* of the transaction (e.g., uncertainty about what performance will be required).
6. *Difficulty of measuring performance* in the transaction.
7. *Connectedness* of the transaction to other transactions involving other people.
8. *Information impactedness* (defined as asymmetric information distribution with the potential of opportunistic exploitation).

In general, the higher a transaction scores along these dimensions, the higher the transaction cost is likely to be.

As a result, transactions high on these measures are good candidates for hierarchical governance, while transactions low on these measures are candidates for market governance. For example, coal, water, and energy have very low asset specificity, low transaction complexity, low uncertainty, easy measurement of performance, and low information impactedness. Correspondingly, these commodity goods are typically acquired in the market. On the other hand, for General Motors, car bodies had high asset specificity, high frequency, and high complexity, so General Motors bought its supplier, Fisher Body, in order to use hierarchical governance for this transaction (Chandler, 1962).

In residential real-estate, various uses of ICT might reduce transaction costs. For example, buyers and sellers can use ICT to reduce the effort needed to search for information. Agents, buyers, and sellers can all use ICT such as cellular phones and online forms to help reduce the cost of contracting. Also, ICT may help reduce the monitoring costs for agents, buyers, and sellers.

Social Capital—A Socially Rich Perspective

The second perspective we present also considers transactions, but instead of treating them as the unit of analysis, it focuses attention on the ways transactions are embedded in social networks that give rise to social capital. By social capital we mean value that is contained within an individual's collected set of social relationships or ties (Burt, 2000; Wigand, 1988). From the social-capital perspective, the unit of analysis is the set of relations that make a social network and, more specifically, the resources that actors draw from these ties. These networks form a social structure that is both enduring and ever-changing (as individual ties are added and removed from the larger network). In this way the social structures of networks encompass the set of patterns, relations, and artifacts that both shape and evolve through interaction among people. Social structures are difficult to define or bound and are constantly evolving since they incorporate physical, temporal, and intangible elements. However, they are fundamental to how people interact (White, 1981). Because of this emphasis on the social context within which transactions are embedded, we label this view "socially rich." In this view transactions cannot be considered in isolation; rather, they must be seen as occurring within existing networks of relationships, embedded within social structures and involving information from many sources who are part of the social network in which the transactions and processes occur (Burt, 1988).

According to Putnam (1993), the first use of the term *social capital* was by Jacobs (1961). Today, the concept of human capital is widely used and understood (often in different ways) by both sociologists and economists as different than social capital. Swedberg (1994) and Powell and Smith-Doerr (1994), among others, have argued for the reintegration of these two conceptual perspectives, since the concept of "capital" is reflected less in land, factories, tools, and machines than, more and more, in the knowledge and skills of human beings (Becker, 1975). This perspective focuses attention on the social structures and connections among value-adding players. Thus, this perspective seems particularly well equipped to explain the circumstances under which cooperation and collaboration help take legal contracts, administrative, and bureaucratic processes to successful completion.

Coleman (1988) reasoned that in addition to a person's knowledge and skills, an important dimension of human capital has to do with an individual's ability to associate with others, a facet critical not only to economic aspects of life but to virtually every other realm of social existence as well. Thus, social capital is one measure of the ability of people to work together for common purposes in groups and organizations (Coleman, 1972, 1988; Putnam, 1993, 1995). This ability to associate—to develop structural relations—may vary from culture to culture, but it is determined in part by the degree to which communities share norms and values and are able to subordinate individual interests to those of larger groups (Burt, 1997). An outgrowth of such shared value is trust, an essential ingredient in any form of social capital, which, in turn, has a lasting, large, and measurable value. Trust between members of a community permits a wide variety of social and business relationships to evolve. Conversely, individuals who do not trust each other tend to cooperate only in settings with formal rules and regulations. These rules and regulations have to be agreed upon, negotiated, litigated, and often enforced. The resulting legal apparatus that must to be put in place as a substitute for trust is a major component of the "transaction costs" identified by the economists (Swedberg, 1994).

The social structures of interest to us for this work are those sets of relationships that help to define the way homes are sold in the U.S. residential real-estate industry. In particular, we focus on the agent's use of social networks to complete processes that comprise a real-estate transaction. Social capital has three dimensions that are relevant for the analysis of real-estate transactions: structure, relation, and cognitive (Tsai & Ghoshal, 1998; Wellman, 1988). The structural dimension involves social interaction that the agent uses to gain access, information, or resources. The relational dimension encompasses qualities that arise from interactions such as trust and loyalty. The cognitive dimension includes attributes such as shared norms, codes of action, and convergence or similarity of views.

We draw attention to social capital because it provides an underutilized perspective in current electronic

commerce research. Powell (1990) found a lack of recognition that socially based forms of coordination, such as social capital, are uniquely different from economics-based forms, such as markets or hierarchies. This lack of distinction has led to historical inaccuracies, overly static models, and the lack of the ability to explain forms of collaboration that are viable means of exchange. Attention to this perspective may help address some of these gaps.

Summary: Two Perspectives on Disintermediation

In this section we presented two perspectives on the potential for disintermediation in the context of residential real-estate. The first perspective focused on the cost of individual transactions and the second on how transactions are embedded into the social context. The key differences between the transaction perspective and social perspective are summarized in Table 1. The transaction-cost perspective assumes that a transaction such as a real-estate closing can be isolated and examined independent of its context. The role of information is external to those who use it, and intermediaries are thus replaceable if other information conveyances can be found. The agent's role is contractual and social structures are not considered. The role of ICT is thus as a decoupler: It serves as a new means of conveyance.

The social-capital perspective assumes the real-estate closing is embedded in a set of social relations that arise from complex ties among a range of stakeholders. Information needed to complete the closing is intrinsic to the stakeholders themselves, is shared across these social networks, and is held internally within those networks. In such a view, the agent's role is defined by relationships. The social structures that shape this definition are the primary means by which agents help to enact the buy and sell activities that a house closing entails. Here uses of ICT can serve as a magnifier of social capital, meaning that using ICT may help differentiate successful and unsuccessful real-estate agents.

RESEARCH SETTING: THE U.S. RESIDENTIAL REAL-ESTATE INDUSTRY

The residential real-estate industry[2] is an appropriate setting for our study because it is:

- Information intensive and information driven.
- An intermediated market (agents and brokers connect buyers and sellers).
- Based on agent–buyer–seller relationships.
- Transaction based, with high value and asset specificity.
- Currently experiencing ICT-induced changes, including predictions of disintermediation.

Residential real-estate is an information-intensive business that relies on computing and communications technologies (Baen & Guttery, 1997; Tucillo, 1997). Agents connect buyers to sellers and do so through control and dissemination of information provided through a multiple listing service (MLS). Agents have rapidly embraced new ICT that might give them an advantage, such as computer databases, geographical information systems, pagers, cellular phones, and, most recently, e-mail and the World Wide Web (Crowston & Wigand, 1999). Both the data reported on here and those reported on by others (e.g., Buxmann & Gebauer, 1998; Crowston & Wigand, 1999) suggest that knowledgeable agents are concerned about the impacts of ICT on their roles in the real-estate business.

Overview of the Residential Real-Estate Industry

In this section we review the structure of the real-estate industry in the United States, then outline the stages in a residential real-estate transaction. Much of the information in this section is derived from our fieldwork (explained in more detail later). Law and regulations of both nation-states and professional societies govern real-estate work, so the process we describe is specific to the United States and is further differentiated by state and local laws, regional and local customs, and legal precedent.

TABLE 1
Contrasting transaction-cost and social-capital perspectives

Elements of perspective	Transaction cost	Social capital
Transaction	Isolatable from context	Embedded in context
Role of information	External to participants, transportable	Embedded in social networks
Role of intermediaries	Replaceable by lower costs media	Central to the social networks
Agent's role	Based on explicit contracts	Driven by relations and ties among people
Social structures	Unimportant to transaction	Primary to closing the deal
Roles of ICT	Decoupler of transactions, focused on information processing	Magnifier of social capital, focused on value of communicating

The role of real-estate agents is to bring together the seller and buyer of a property and to advise both of these principals, independently, regarding their responsibilities in the transaction. In the United States there are typically two agents involved in a transaction. The listing (or seller's) agent assists a seller in marketing a property, by helping to determine an asking price, providing guidance for making the property attractive, advertising it, and screening potential buyers. When offers to buy the property are received, the seller's agent advises in the negotiations and details of the transaction. The second agent, typically known as the buyer's agent, helps a buyer find suitable properties among those offered for sale and narrows the selection to a specific property. Thus a typical house sale has the buyer and seller negotiating through the intermediation of a buyer's agent and a seller's agent.

Most agents share listings through a multiple listing service (MLS). After a listing agent signs a contract with the seller of a property, the agent enters a description of the property into the MLS database. Originally, the output of the MLS was a printed book combining listings from all its members. Today, MLSs are computerized and increasingly online and in web-accessible databases. The MLS is operated on a regional basis for the use of real-estate agents who pay an annual fee to participate (they become "members"). Typically, regional membership in the Realtor association also covers dues for the National Association of Realtors (NAR). Real-estate agents who are members of the NAR are called Realtors (which is a trademarked name). While the MLS for a particular region is usually owned by the local Realtors' organization (known as the "board"), it is typically operated by a specialized MLS company. Most of these MLS databases are based on proprietary technology and were developed to handle specific regional issues. Currently, this degree of customization makes it difficult for one MLS database system to easily interoperate with others.

Usually the buyer physically inspects several potential properties before deciding which one to buy, with the buyer's agent making the arrangements for these visits and accompanying the buyer. Agents who are members of the MLS can search the database for properties that meet their clients' needs. The agents can more easily show properties because the door key to most MLS-listed properties is made available to other members of the MLS (through a "lock box" to which all members have access, attached to the front door handle of the property). The lock box can record all accesses to the key, providing the selling agent a record of which other agents have viewed the property. In other words, the MLS is much more than just an information repository, since it includes services and agreements that shape the relationships among agents.

Once a property is selected, the buyer's agent provides advice to the buyer on making an offer to purchase the property and helps in the negotiations and details of the transaction. When an offer is made and accepted there is typically a set of contingencies on the contract that need to be addressed. These contingencies typically include the buyer's financing, inspection and appraisal of the property, and so forth. The agents facilitate this process through their social networks. For example, a buyer's agent might refer a buyer to a lender, house inspector, or other necessary professionals. A listing agent might suggest several repair personnel to help the seller redress work demanded by the buyer.

In most cases the seller pays both agents, and this is part of the closing settlement. When listing a property, the seller contracts to pay the seller's agent a commission, usually a percentage of the sales price, when the transaction closes. These commissions are typically in the range of 5 to 7% of the value of the property. Thus, while exact figures are not kept, using 6% as a base commission, in 1998 total commissions exceeded $38 billion and in 1999 grew to be greater than $41 billion (current exact sale price and sales volume data are available online from the National Association of Realtors at http://nar.realtor.com/research/home.htm). In residential real estate the seller agrees to pay the commission even if the seller's agent does not find the eventual buyer. As a result, an agent can simply accept a listing and wait for a buyer to emerge. This somewhat lopsided relationship in favor of the agent may have consequences for trust perceptions and may create potential conflicts of interest in the agent's relationships with buyers and sellers. However, a seller's agent is considered to owe a fiduciary duty to the seller, which includes the responsibility to make a reasonable level of effort.

A buyer need not have any contractual agreement with an agent. When a buyer buys a property listed in the MLS, the MLS agreement among agents provides that any agent who introduces the buyer is paid half of the seller's agent's commission. Because the seller pays both agents, traditionally both agents owe a fiduciary duty only to the seller, creating a divergence of interest between the buyer and an agent with whom they may be working. For example, an agent working with a buyer must disclose to the seller the maximum they think the buyer would be willing to pay for the property, even though this is clearly not in the best interests of the buyer. However, a buyer can independently contract with an agent for what is called buyer's agency. In this case, if a buyer purchases a property offered directly by a seller (a for-sale-by-owner or FSBO), the buyer must pay the agent's commission. If the buyer buys an MLS property, then the seller pays the commission as usual. In return for the guaranteed commission, the buyer's agent owes a fiduciary duty to the buyer rather than the seller.

In all parts of the United States, agents are affiliated with a real-estate firm that employs, or is headed by, a broker. Real-estate firms range in size from a single agent-broker

to dozens of agents along with clerical and managerial staff. Some agencies are franchises of national chains (e.g., Better Homes and Gardens or RE/Max); others are local. Agents enter into listing contracts on behalf of the broker, get a variety of services from the firm, and, in return, give the firm a share of their commissions. These relationships are contractual, as agents are independent contractors rather than employees of the agency. A highly productive agent has the bargaining power to negotiate for additional services or a more favorable division of the commission. In other words, the organizational structure of the real-estate industry is primarily contractual, agents essentially acting as "companies of one." Independent agent-brokers provide their own resources and develop their own network. Independent real-estate agents do not have to share their commissions with an agency, but do not have access to the resources of the agency as an affiliated agent does. Lawyers and title clerks (who may both clear the title record and record the transfer of ownership into the local "deed books") are typically involved in both agent-supported and FSBO sales, as are inspectors, appraisers, mortgage bankers, etc.

RESEARCH METHODS AND DATA COLLECTION

Our approach to understanding disintermediation in electronic commerce demanded that we gather data on the source of transactions costs and the social networks in which the transactions take place. To do this we focused our data collection on a particular regional setting, drawing data from one metropolitan area in the northeast United States (driven by the pragmatics of access). In this way we could gather data that inform both theoretical perspectives and yet minimize the distortions due to the variations in local customs and laws that a multiregion study might face. In the rest of this section, we outline our data collection methods and data analysis approaches.

Data Collection Methods

The goal of our research is to better understand how residential real-estate agents work and how their work is being affected by ICT use. To support this, our research approach focused on documenting and understanding how the agents use various ICT in their work. We used the standard data collection methods of fieldwork: interviews (both semistructured and structured), participant observation, and archival records collection (cf. Jackson, 1987). Field notes were prepared after every field encounter. These notes have two parts: a chronology of action and an interpretation of these actions. The chronology represents a factual recounting of the observation period from the observer's perspective. The interpretive notes provide a more free-flowing account of the intuitions, ideas, and interactions that arose during, and because of, the observation.

As mentioned earlier, we focused on one local market that encompasses a medium-sized city and its suburbs. A series of 13 interviews and several observations, detailed later, totaling 20 days of fieldwork, were conducted from September 1998 through December 1998 (see Table 2). We also collected all memos, correspondence, and other printed or written material that we could. Often, these "organizational droppings" provided insight into observed behaviors, allowed for historical accuracy and progression, and set out future issues. Current archival data includes items provided to us by the agents/interviewees, material sent along by the local board of realtors, and extensive library and web research by two graduate students.

We used fieldwork to gather data from all the participants involved in a real-estate closing process. This includes interviews of real-estate agents, real-estate brokers, a real estate franchise owner, a broker/owner, the local realty association president, the president of the local MLS, and several people involved in a typical closing (see Table 2). Our interviewees included four women and nine men, and we spoke with several key informants on multiple occasions (cf. Seidler, 1974). Interviewees include experienced and relatively new agents, technically sophisticated and technically naive agents, broker/owners, and franchise managers. After each interview, we asked our informants to recommend others for subsequent interviews (snowball sampling). We continued to interview agents until we reached theoretic saturation on the key constructs of transaction costs and social capital (cf. Miles & Huberman, 1994). We also spoke with a number of the participants in the real-estate closing process such as inspectors and appraisers to cross-check the real-estate agent's responses.

In addition to the interviews, we observed five meetings of the local Board of Realtors committee on new ICT. In each meeting, the role and importance of ICT were discussed. We followed up by meeting individually with committee members who represented different points of view on these various ICT issues. We gathered archival documents from all interviewees, materials from the meetings, additional material from a range of sources such as the local and National Association of Realtors (NAR), web sites, and the existing professional and academic literature.

Data Analysis

The analysis reported on in this article draws on field notes, interview transcripts, and archival records. Two analysis techniques are used to analyze this corpus: interim documentation, and explanatory event matrices (Miles, 1979; Miles & Huberman, 1994). Interim documentation is generated by ongoing reflective analysis of field notes. This analysis was done individually by each researcher as well as by all researchers as a group. This technique enabled the synthesis of data to support and refute interim propositions

TABLE 2
Summary of interviews

Interviewee (position/particulars)
Real-estate agent (experienced and successful female agent with a large national franchise, technology savvy; key informant: three interviews each of about 90 minutes)
Real-estate agent (experienced and successful male agent with a large national franchise, not technology savvy; interview lasted 50 minutes)
Real-estate broker/owner (female owner and manager of local franchise of large national firm; interview lasted 75 minutes)
Real-estate broker/manager (male manager for one of four offices of local franchise of large national firm; interview lasted 75 minutes)
Real-estate agent (male, not technology savvy, returning to work as agent with large national franchise; interview lasted 40 minutes)
Real-estate broker/owner (male, not technology savvy, owner of a small commercial and residential, solely owned local company; interview lasted 65 minutes)
Real-estate agent (male, not technology savvy, and just beginning in real estate, working for successful agent; interview lasted 45 minutes)
Real-estate lawyer (male, working for a medium-sized, local firm, specializing in real-estate and personal law; interview lasted 35 minutes)
Home inspector (male, working for himself; interview lasted 20 minutes)
Mortgage officer/broker (female, employed by large national mortgage corporation; interview lasted 20 minutes and was done over the phone)
Executive director, local association of Realtors (female, not technology savvy; key informant: three interviews—the first interview lasted 90 minutes; second interview lasted 45 minutes; third interview occurred across a day of traveling together)
Executive director, local MLS company (female, not technology savvy; interview lasted 55 minutes)

and also provide guidance for future data collection efforts. Explanatory event matrices relate constructs to events, organizing a rich set of data to respond to propositions (Miles & Huberman, 1994). Data are used to populate the cells, with the other axis being sources of data. This technique demands an a priori theoretical (or at least categorical) set of constructs to serve as one axis of the matrix.[3] And, as we have discussed, this analysis is driven by the elements of the real-estate closing transaction and by the social-capital constructs in which this real-estate transaction is embedded. The intent of the analysis in this article is to present and contrast two conceptual perspectives on the uses of ICT in the practice of real estate.[4]

RESULTS

In this section we present the results from the analysis of the data collected through our fieldwork. We first discuss the increased use of ICT in this industry and conclude by presenting some apparent changes in the role of agents.

Increased Use of ICT in the Real-Estate Industry

The increased use of ICT in residential real estate encompasses both information and communication technologies. This can be seen at several levels of analysis. At the individual level, the primary increase in information technology use is the use of the World Wide Web (the Web) to display house listings. A second increase is the use of advanced search features and interfaces to access the online MLS. Our research to date suggests that the ways in which real-estate agents access the MLS and use the advanced searching, querying, and reporting features that the current forms of MLS access software allows are worth additional attention. The increased use of personal communication technologies is seen in the nearly pervasive use of cellular phones and in the growing interconnection of traditional phone service, voice mail, cellular phones, pagers, and even e-mail as an integrated, and often extensively personalized, telecommunication system that delivers all forms of communication to the agent as she drives around town.

Of course, the increased uses of ICT also increased support needed for maintenance, data entry, and record keeping. Many agents look to the local real-estate franchise or broker/owner who holds their real-estate license for such support. This has the potential to change the dynamic between the agency and the individual agent, moving the local real-estate agency into a larger role of providing critical and expensive ICT infrastructure for agents. Our data indicate that residential real-estate agents have begun to

realize the potential of the World Wide Web (the Web) (see also Bottenberg, n.d.; Harper, 1997; Self, 1997). As we discuss in more detail later, most agents are using the Web to support marketing both properties they are listing and themselves. Many other agents are adopting these new communications channels for their own use. While we did not see this among the agents we interviewed, there are indicators of substantial changes in how agents reach their clients and customers. For example, one agent in the vicinity of San Francisco, Carol Lucas, launched her own web site in December 1996 and claims that 75% of her business is a result of her web presence (Nelson, 1998). The agents are beginning to stress individual service and creating other value-adding mechanisms such as connections to other professionals whose services are required in the house buying process. Many professionals, such as lawyers, appraisers, and mortgage brokers, are involved in the final details required before closing a real-estate transaction. Agents facilitate these transactions by coordinating a web of other service providers for their clients, such as building inspectors, appraisers, loan officers, and lawyers. Agents add value for their clients by quickly assembling the necessary professionals, thus providing one-stop shopping. This work demands extensive uses of ICT such as phone (both mobile and landline) and facsimile machines. All interviewees pointed to the increased use of cell phones as a critical tool that allows real-estate agents to better shepherd a house closing.

Web-based alternatives to many of these supporting services are increasingly available via the Internet. Fletcher (1997) points to several sites that offer appraisals. For example, Experian Information Solution (www.experian.com) sells reports of the assessed value of a property and the prices of comparable houses. Yahoo (realestate.yahoo.com) offers reports of home sales for free. Overby (1997) reviews a selection of mortgage sites. Mortgage origination on the Internet has reached 1% of total originations in the United States, according to California-based Myers Internet services (at www.myer.com) (see Myer, 1997). Many real-estate web sites provide links to these services. For example, Homeadvisor.com includes an integrated mortgage finance component, which permits users to evaluate lenders' offerings and, while online at the web site, to actually qualify for a loan. Finet Holdings has gone beyond linking its financial services to the emerging real-estate sites. This company built its own network to automate the entire real-estate transaction process. Its subsidiary, the Property Transaction Network (www.theptn.com), attempts to bring real-estate agents and consumers together with real-estate services and insurance providers, while its finance site (www.iqualify.com) provides instant loan approval.

The growth of real-estate commerce on the Internet and the number of new sites providing real-estate tools and information have also affected both individual real-estate practices and the roles of industry players (see, e.g., Crowston & Wigand, 1999). Of particular relevance for this research are more than 3600 web sites being developed to support various aspects of the real-estate sales process (National Association of Realtors, 1998). Numerous MLS systems, as well as advertisements for houses sold directly by owners without a real-estate agent, can be found on the Web. For example, Homehunter (www.homehunter.com) links to real-estate classified advertisements in 31 daily Knight–Ridder newspapers. Owners.com Inc. (www.owners.com) currently lists about 35,000 houses for sale by owner, and has listed over 200,000 homes since opening in 1996. Such services are directed to consumers trying to make an end run around the MLS. Rather than paying a commission, sellers pay only for advertising. A listing in Owners.com without pictures is free; packages including online pictures and physical yard signs cost $65 to $115.

The current industry players are also confronting nontraditional players who are entering into residential real-estate to provide alternatives to the MLS. For example, Microsoft's Homeadvisor (homeadvisor.msn.com) features a database of more than 500,000 homes drawn from regional MLS systems. The site offers specific geographic mapping, including such statistics as the neighborhoods' median age and income, ratings of local schools, and frequency of crime. Other services, such as HomeScout Real Estate Search (www.homescout.com), integrate information from multiple sources. Such web-based services suggest that there is some evolution toward the uses of electronic markets to support buyers finding sellers by searching multiple databases of offerings (Crowston, 1996). Combining access to both the MLS system and FSBO homes, as HomeScout does, means that buyers may not even be aware of the status of a house (sold through a broker or not) they are considering.

Changes in the Roles of Real-Estate Agents

Three major implications can be drawn concerning the ways in which the traditional role of real-estate agents as information intermediaries is being contested. First, until recently, the only way a potential buyer could easily identify houses for sale was by working with an agent who could search the MLS database. The listing data were an important resource and source of information-based power for the agent and, therefore, closely held. For example, agents pointed out that as recently as the early 1990s, it was common practice to allow *no* customer access to the MLS (print or electronic), making the MLS and the agent a de facto information monopoly.

Recently, this control has been weakened by the development of alternative sources of listing information. Some

individual realtors and for-sale-by-owner listing sites are taking advantage of the Internet to more widely disseminate their listings. Such actions seem inconsistent with the notion that listing information should be tightly controlled. However, from the point of view of a single agent trying to sell houses, listings are advertisements and therefore should be made available to as large an audience as possible. Given these developments, many MLS operators and real-estate agencies have also started to use this new medium to make MLS data publicly available. After all, the only way for a listing to get into the MLS is by contract with an agent, so widespread publication does not obviate the need for listing agents, who ultimately control listing information. Thus it is common to see MLS data about a single property in multiple places. For example, such data could be listed on www.realtor.com, an agency's corporate web site, a collaborative web site with the local newspaper, and/or on the individual listing agent's personal web site.

Second, the data also show that real-estate agents play an increasing role in "process support" as the contractual complexity of the real-estate process increases. This process support is important for most buyers/sellers since most buy or sell homes infrequently and are unsure of what to expect or how to respond. As a result of these developments, the traditional roles of the real-estate agents are being redefined. Moreover, these developments highlight how the social structure, personal contacts, and local knowledge increase the value added by the agents. Figure 5 (shown later) presents a model highlighting the structural dimension of agent social capital. In essence, the presence of the agent and his or her ability to bring together the network of connections that the purchase/sale of a house demands facilitate the processes that lead to a closing (Swedberg, 1994).

Third, the data provide some examples of the active management of relationships among both clients and other professionals. For example, in our interviews we learned that agents classify people as *suspects*, *prospects*, *customers*, or *clients*, depending on the nature of their relationship, and then treat people in these categories in specific ways. A buyer's agent sounds out the clients in several ways to determine their needs, drawing specific information based on the interpretive schema of the agent. The robustness and complexity of the agent's interpretive scheme in conducting this information gathering appears to be a major differentiator among agents (Lamb, 1997).

Moreover, agents also carefully construct a set of strong ties with professionals such as real-estate lawyers, mortgage brokers, and house inspectors. Each real-estate agent maintains several of these professionals in a slowly evolving and symbiotic social network. An agent may have three or four lawyers in his or her network and may add a new tie only if one of the existing links begins to weaken (by being too busy or not performing to the level expected). This type of action reflects the cognitive and relational aspects of social capital (Tsai & Ghoshal, 1998).

DISCUSSION

In this section we first discuss the findings from each of the two theoretical perspectives introduced earlier. We then provide an integrated discussion in which we highlight the contributions of both perspectives and the relationship between them.

Transaction-Cost Perspective

In our discussion on the transaction-cost perspective, we noted that specific transaction characteristics suggest the use of particular governance mechanisms. Houses differ widely along numerous dimensions (size, location, features), which makes them hard to describe succinctly and increases their asset specificity. Real-estate transactions are complex, with somewhat high uncertainty, and it is difficult to measure outcomes. Finally, transactions are characterized by high information impactedness, since sellers typically know much more about their houses than buyers can easily find out. From the perspective of transaction-cost theory, these characteristics of the real-estate transaction would suggest that real estate would have very high transaction costs. Indeed, the nearly $100 million a year in commissions earned by real-estate agents in our research area (based on sales data and commission fees from this region) can be seen as transaction costs. The transaction-cost perspective suggests that transaction costs would be reduced if hierarchical rather than market governance mechanisms could be used. On the other hand, the low frequency of the transaction requires that real-estate be primarily a market-based activity, since it would be impractical for an individual who rarely buys a house to have the ability to make one.

One view of the role of real-estate agents is that they help reduce the transaction cost for an individual buyer. For example, an agent can reduce contact cost by use of the MLS, provide standardized contracts to minimize contracting cost, monitor performance, and so on. Agents might also address some of the transaction attributes, such as providing specialized knowledge to help buyers more quickly determine if a house is appropriate (thus managing asset specificity), providing transaction support (thus managing transaction complexity and information impactedness), and so on. Clearly, transaction costs cannot be entirely avoided, since agents must be paid. But, the cost of the agent could be less than the transaction costs borne by a buyer who does not use an agent (Schmitz, 2000). Indeed, the recent series of television commercials sponsored by

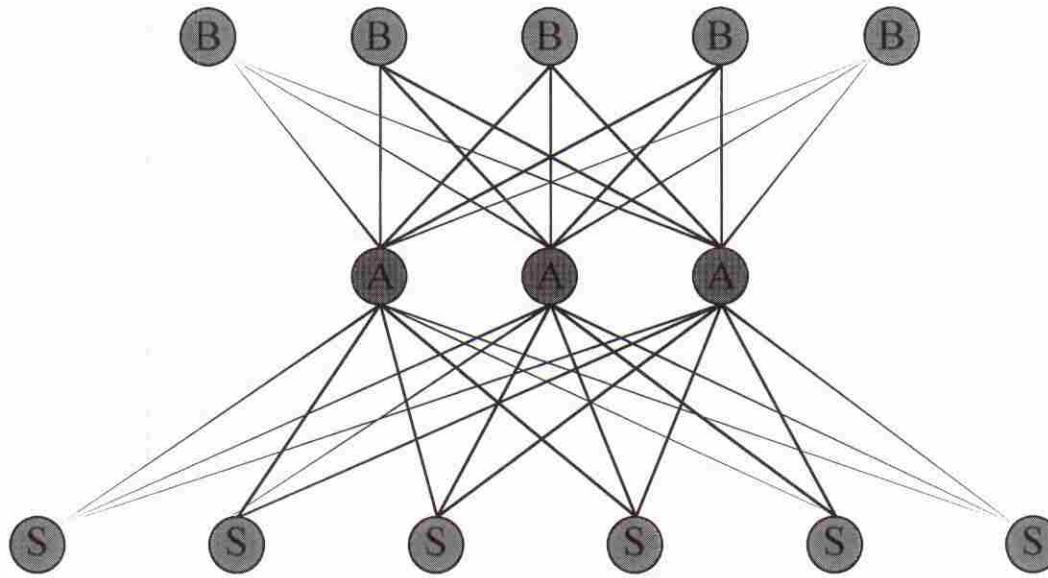

FIG. 1. A centralized market, from Malone and Smith (1988). B = Buyers, S = Sellers, A = Agents. Lines represent communications links.

the NAR made the case that Realtors save time for both buyers and sellers.

Researchers have considered additional factors within this basic transaction-cost framework. In particular, Malone and Smith (1988) analyzed the effects of the cost of communications and the reliability of those performing the tasks. They describe four generic coordination structures and rank them in terms of production costs, coordination costs, and vulnerability costs. Of the four models, the centralized market model depicted in Figure 1 is closest to the typical residential real-estate process. The customers contact the real-estate agent, who sets the process into motion by coordinating the interaction among other value-adding players in the real-estate process. In this model, the real-estate agent is the intermediary between the customer and the seller in the process. Figure 2 offers a more detailed model, showing the role of the MLS in centralizing the real-estate process, as discussed later.

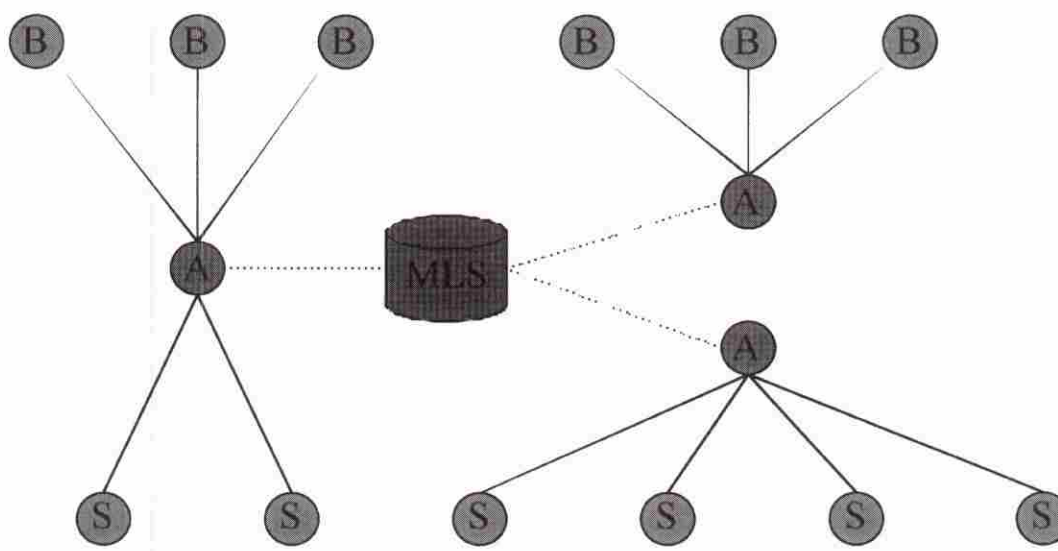

FIG. 2. A centralized market in real estate, showing the role of the multiple listing service (MLS).

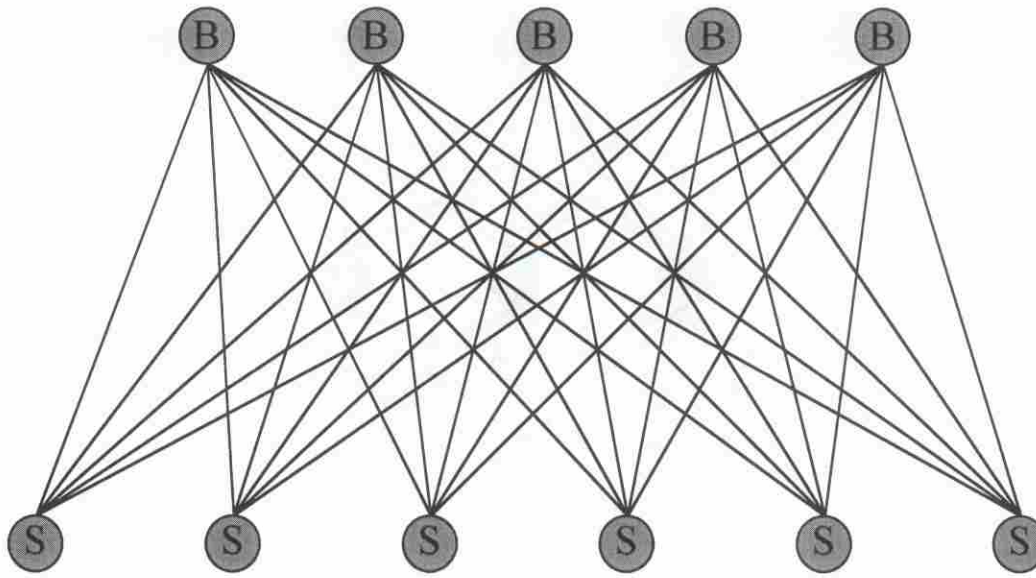

FIG. 3. A decentralized market, from Malone and Smith (1988).

The MLS allows buyers and sellers in contact with different real-estate agents to still share information about available listings.

What keeps a buyer from bypassing the agent to access sellers directly? Such an effort is described by the decentralized market model of Malone and Smith (1988), shown in Figure 3 as a direct connection between buyers and sellers. The number of required communications channels in the decentralized market is exponentially greater than in the centralized market model, reflecting the increased cost and decreased efficiency of this approach, especially compared to that described in Figure 2.

Malone and Smith's analysis also addresses the effect of using new forms of ICT. Buyers in a decentralized market face a high cost for communications, but this cost can be reduced by the use of ICT. In particular, the MLS makes it possible for an agent to have complete information about houses offered without the cost of contacting each seller or agent personally. A similar transition is now becoming possible for individual buyers.

A transaction-cost analysis suggests that a new structure for the industry may be emerging as a result of using new ICT, as shown in Figure 4. In this structure, buyers and sellers can contact each other directly, as in the decentralized market of Figure 3, but use the Web and the myriad real-estate-related sites to avoid incurring the cost of maintaining individual communications ties. Because this new structure avoids the need for agents, its emergence prompts the common prediction of disintermediation in real-estate.

In summary, the transaction-cost perspective focuses on changes in the costs of various transactions due to the use of ICT. It prompts the prediction of disintermediation as buyers and sellers using ICT seek to avoid the costs of the agent and the industry structure shifts from Figure 2 to Figure 4. This shift should show up as an increasing proportion of homes sold by owners (so-called FSBOs, or "for sale by owner"). However, data from our study region suggest that the FSBO rate remains steady at about 2% of the total number of transactions. Similarly, national figures presented by the National Association of Realtors show that FSBO transactions have remained steady for 1996–2002.

One explanation for the apparent contradiction may be that the Internet is too new a phenomenon in our study region to have had a significant impact on sales. Perhaps, then, agents are slowly "giving ground" and the magnitude of the structural transformation currently underway will become apparent much later. Over time we would expect to see agents offer their services piecemeal to consumers (unbundling), with increased levels of unbundling occurring, as the agents are slowly disintermediated. For instance, an agent might focus on providing a select group of services such as MLS listings and mortgage services. There is some evidence of unbundling in the region we studied. For example, several agents are now offering limited support, such as a flat fee for entering data into the MLS or a pay-as-you-go arrangement for services such as advertising, though there is no indication of this either working for these agents or growing in popularity.

We might also expect that as the use of the Internet is legitimated, agents will face increasing competition from other groups that seek to use ICT to disseminate their own information. For example, mortgage firms, financial institutions, chambers of commerce, and other value-adding

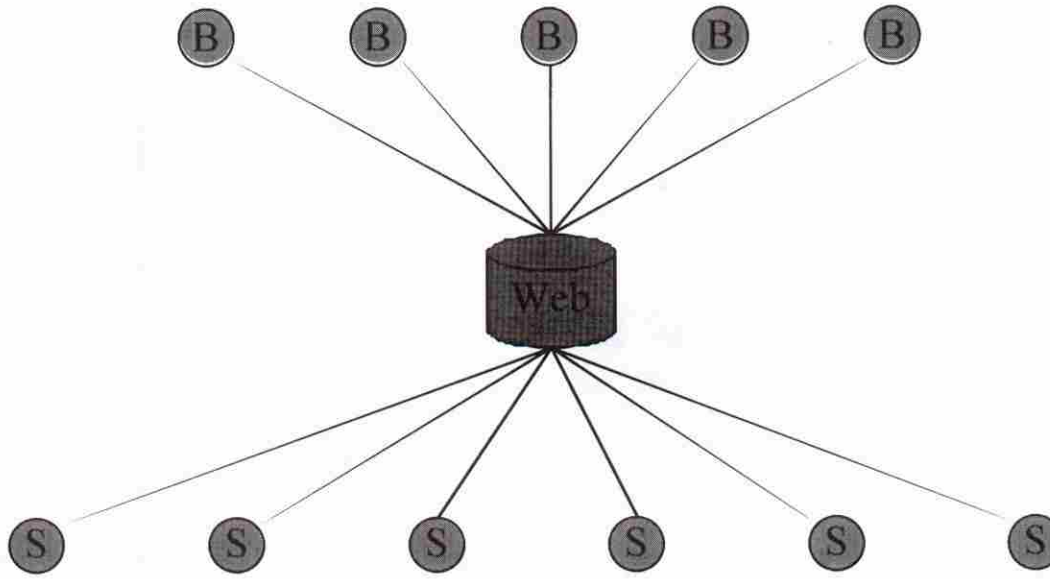

FIG. 4. A decentralized market facilitated by a listings web site.

players have also established web sites and cross-affiliations influencing the real-estate business. An increasing number of web publications list FSBO properties. Through the use of the Internet and ICT, consumers are able to access information that formerly was only made available to agents. On the other hand, both Schmitz (2000) and Grover and Ramanlal (1999) note that intermediaries can also use ICT to manipulate the cost of a transaction. Specifically, intermediaries can increase transaction costs by further constraining access or adding complexity to goods and services to complicate cost comparisons. In other words, the flexibility of electronic markets works in both directions. Our current data reveal no such manipulations, though most agents encourage their clients (buyer or seller) to communicate through them. This allows the agents to intermediate any discussions or decisions relative to closing and provides the opportunity for direct manipulation.

Social-Capital Perspective

The social-capital perspective conceptualizes the process of selling/buying real-estate as a set of interactions embedded within social structures that the agents help to develop. For our analysis, we characterized social capital as having three elements: a structural network of ties to others, the use of that network to develop trust and loyalty, and the cognitive value of this effort in the development of shared meaning and norms. For the last element, we saw little direct evidence other than the almost universal use of real-estate agent's language (closing, buyer agency, listings, the MLS) by all parties involved.

There is more direct evidence for structural and relational elements of social capital. The evidence of the development of the structural element of social capital is first seen in the real-estate agents who allow their customers to have access to the agent's established social network of value-adding players. It may be that this access is the primary value that an agent provides to a customer: more important than simple listings data. For example, since most buyers need to secure a mortgage, real-estate agents often seek out and form strong relationships with mortgage brokers who will help their clients. In this way the social network and especially the strong ties represent the embedded nature of information relative to the closing process. That is, important information needed for moving the process toward a closing is distributed across the members of the real-estate agent's social network. Thus the ability to identify and draw on the proper person's expertise is one part of the real-estate agent's value-adding expertise. The real-estate agent is central to these links, and their removal leads to structural holes (the missing connections between nodes that signal the absence of access to needed information; see Burt, 2000). So additional sources of decontextualized information, such as listings, frequently asked questions (FAQs), etc., may not eliminate the need for support. This is particularly the case for customers who have little experience with the complexities of real-estate transaction.

Figure 5 presents a graphic depiction of the structural dimension of agent social capital. This figure can be compared with the other models (particularly Figure 4) described earlier. In this view, it is the core networks the agents maintain and the interconnections among them that

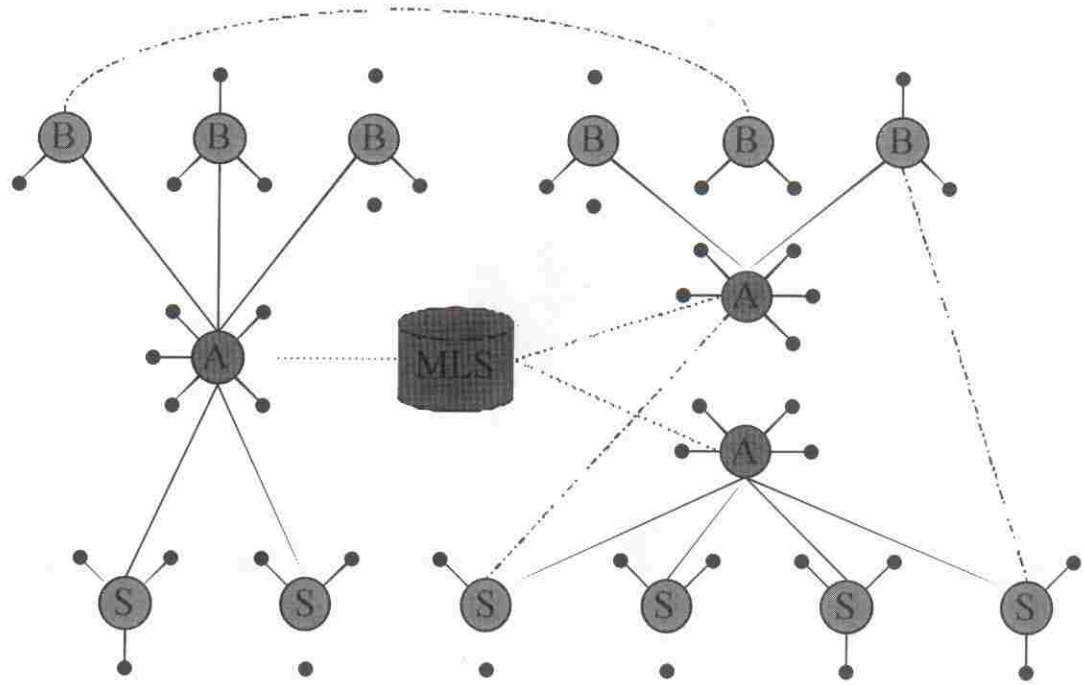

FIG. 5. Real estate transaction embedded in a web of relationships. Black circles indicate other social contacts. Dashed lines indicate contacts unrelated to the buy/sell transaction.

function as coordination mechanisms. One value of a social network is that the well-connected members have more access to information than do poorly connected members. This shows up in the ability of well-connected network members to bridge sparsely connected social units (Burt, 1992, 2000). For example, real-estate agents have large networks for buying/selling homes compared to the typical buyer or seller; this allows them to bridge the structural hole that most sellers and buyers face, making them invaluable for the transaction.

The structural aspect of social capital is also evident in the real-estate agent's efforts to make connections with as many potential customers as possible. For example, in the regional market that serves as the basis for our research reported here, well-connected and successful agents maintain contact lists (databases) that may have 10,000 or more contacts (the metropolitan statistical area in which we carried out our study has just over 500,000 people).

Theorizing from a social-capital perspective suggests that the increased use of ICT by real-estate agents provides a means for these people to extend their social networks and thus increase their social capital (Eisenberg et al., 1985; Kraut et al., 1998). Increased connectivity via cellular phones, pagers, and e-mail allows real-estate agents to more easily maintain contacts with the members of their social networks. The uses of ICT also make it easier for potential customers to contact the agent. And, as we mentioned earlier, an Internet presence can extend the agent's presence. Contemporary "web-savvy" agents often have their listings on personal web sites, organizational web sites (such as local franchise sites), cooperative sites (such as www.homehunter.com), and the National Association of Realtors web site (www.realtor.com).

These findings further suggest that conceptualizing the structural element of social capital in terms of their underlying, network-like structures, such as articulated by the strength of weak ties theory (Granovetter, 1973, 1982), provides additional insight into how real-estate agents work (Crowston et al., 2001). The strength of weak ties theory suggests that the social network of any member is their primary resource for learning about their world. Participants in the network have relationships with one another of varying strengths. Strongly-tied-together members in a network tend to be more similar to each other than different, more likely to be available for each other, share more common interests, and interact more frequently. Conversely, weakly-tied-together members in a social network tend to communicate less frequently, be more different than similar, and provide both more new information into the network and more access to other social networks. Some evidence of the value of such ties can be seen in the online chat groups (known as "homespeak forums") that are part of www.realtor.com.

Applied to the U.S. residential real-estate domain, the preceding analysis suggests that agents with large social networks populated with more weak ties will have more

social capital to draw upon. The more social capital-rich agents will get more listings (via acquaintances) and will also be able to point prospective clients to others who might be able to provide value-adding services. The latter practice may result in various forms of desirable reciprocation with these others, thus widening the degree of the agent's connectedness and exposure. In other words, social networks are self-reinforcing (Burt, 2000).

Attention to the relational element of social capital is indicated by the extensive reliance on the agents by both buyers and sellers. This is where the process support efforts of real-estate agents are both nearly invisible to most customers and very useful. In most cases, once a purchase and sales agreement is signed (meaning that the house will sell if all contingencies are removed), buyer and seller await guidance from their respective agents. On the seller's side, the agent works to ensure the buyer's contingencies are removed and that nothing from the seller's side of the transaction is left undone. The buyer's agent is often busier coordinating the buyer's financing, title and legal documents, inspectors, and appraisers, and doing so in a way that anticipates problem areas (such as settling postinspection issues and buyer's credit approval) to keep small problems from disrupting the closing.

Agents report, and we also observed, extensive use of cellular phones and facsimile to make both the negotiations for purchase and the closing go smoothly. Typically this requires dozens or even hundreds of calls for each closing. It seems that both the cellular phone and the facsimile are almost universally used in the real-estate business. Use and acceptance of the cellular service phone was so pervasive that local cellular service providers had specialized packages for real-estate agents. The local Realtor board has also gone to the effort to provide summary/comparison sheets on these plans for their members. Most of these plans linked the voice mail on the landline, cellular phone/mail, and even e-mail into a common system.

Real-estate agents' attention to the development of social capital, and their uses of ICT to assist in this development, can also be seen in the interdependent nature of the structural and relational elements of social capital. As real-estate agents develop their network of both strong professional ties and weak customer ties, they are pursuing different relational efforts. For their strong ties they work to maintain the tie strength. For weak ties, they use the various ICT (e-mail, web, and phones) and other media (like mailings) to maintain some contact. More importantly, these technologies allow their weak tie connections to contact them. From a social capital perspective, the agent facilitates the process of negotiation and closing by linking members of his or her weak tie network with those of his or her strong tie network in a temporary web of individuals with different expertise required. The web of ties is often made through the extensive uses of ICT like cellular phones and facsimile, and the central nodes are two (or perhaps even one) real-estate agents. Explained this way, the transaction is best seen as a temporary structure that arises because of the larger structure developed by the real-estate agent.

Comparing the Perspectives

Our analysis suggests that the common focus on a house sale as a simple transaction presents a useful but incomplete picture of the real-estate industry and the potential effects of ICT. Like travel agents and stockbrokers, real-estate agents are market intermediaries in that they coordinate the myriad pieces that make up the transaction. However, real-estate transactions are more complex and require the contribution of many different value-adding players. As a result, real-estate agents provide more than just information about available properties. This contradicts the potential for disintermediation suggested by generic transaction-cost economics (Sarkar et al., 1995; Schmitz, 2000). In other words, the real-estate business is not a "perfect" market: It benefits from the "lubrication" offered by real-estate agents. Gittell and Weiss (1997) note that considerable research has been conducted on the antecedents of coordination and on the structure of organizational networks, while research linking formal organizational practices and informal networks has been generally neglected. Informal networks, social capital, and relational coordination appear to be key to the agents' ability to promote their position as the market intermediary and coordinator of the real-estate transaction process. Thus it is important to look at network-related activities in the real-estate transaction process in order to understand how the agent coordinates and influences other value-adding players in the value chain. The further development of formal theories of social capital could lead to strategic application of these theoretical perspectives in the areas of electronic commerce.

Conceptualizing real-estate agents' work as the development of social capital allows us to also view the process as embedded in the social structures created by current contractual arrangements. For example, the closing step typically demands physical presence and paper-based transactions. Thus an agent who can provide the seller/buyer with a competent lawyer by drawing on his or her social capital maintains his or her position as a process facilitator. Furthermore, this agent also increases his or her social capital by adding the seller/buyer (or both) to his or her network of weak ties.

The real-estate agent's knowledge of the transaction process and his or her network of value-adding players serve to distinguish the real-estate industry from others that are seeing extensive disintermediation of information intermediaries. Agents not only pass information back and

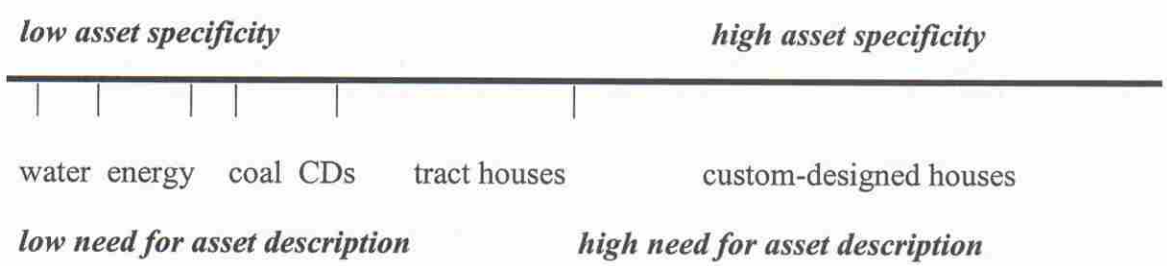

FIG. 6. Varying levels of asset specificity create varying needs for description.

forth as in a typical market, but also add value to the transaction process given their knowledge of the transaction process and the social capital that they possess. Further, their use of these networks forms the "market" in which the transaction occurs (Swedberg, 1994).

Essentially, the residential real-estate agent aggregates the services of the value-adding players and coordinates the real-estate transaction. Creating and maintaining this network of value-adding players, past customers, and potential future customers constitutes the main work of the real-estate agent. Consumers choosing to conduct the real-estate transaction on their own or to retain an agent for limited parts of the process may not have access to the larger network of value-adding players that a real-estate agent provides. Nor do most consumers have the transaction knowledge of the real-estate agent. The real-estate agent as a trusted intermediary is in a unique position to guide buyers and sellers through the numerous angles and steps in this complex, emotionally laden process. This, it seems, fulfills an important "hand-holding" function welcome to buyers and sellers during the often compressed, potentially frenetic time frame in which real-estate closings occur.

The transaction-cost perspective helps us recognize that residential real-estate closings have high transaction costs for at least three reasons. First, residential real estate is high in asset specificity in that any real estate is specific to a given transaction. Second, residential real estate requires that extensive information be supplied about the land and house. Third, residential real estate is high in uncertainty given the complexity and inevitability of contract modifications required in the transaction process. The transactions are also low in frequency given that generally buyers purchase few homes, which means that buyers and sellers are generally not very skilled in conducting the transactions.

These considerations suggest that a focus on transaction costs may be most appropriate in cases where the specific conditions outlined by transaction-cost economics for markets are met, namely, in spot markets for commodity goods. Under these conditions, the goods being traded are fungible, buyers and sellers agree on their evaluation of the goods, and it is relatively easy for a buyer to know what they are getting. As a result, a single transaction can in fact be disassociated from others without loss. However, our work suggests that as goods become unique and/or as evaluations become idiosyncratic or require expertise to make, it becomes harder for a buyer to know what they are getting. As a result, any individual transaction must be supported by many other transactions. As a result of this interdependency, one transaction is connected to a network of other transactions.

Drawing on this perspective, in Figure 6 we outline a suggested gradation of asset specificity ranging from water and energy to custom-designed homes. We expect a transaction focus to be most appropriate at the low end of this scale and least appropriate at the high end. We note that the participants in any market are embedded in a social context (Burt, 2000; Swedberg, 1994). However, some transactions require less information from the context than do others. For instance, an online purchase of a CD occurs within the context of a person who learns of new CDs and new sources to buy CDs from his or her friends and coworkers who know his or her music preferences. At the time of the purchase, however, he or she may need little transaction support.

Is there any clear connection between transaction-cost and social-capital perspectives of ICT use? We think so, and point to Gittell's concepts of relational coordination (Gittell, 2000a, 2000b). This work builds on both coordination theory and organizational level conceptualizations of social capital. Relational coordination encompasses both communication and relationship ties among participants. Gittell's work has explored relational coordination in airlines and hospitals. She finds that higher levels of relational coordination have a significant and positive impact on both quality and efficiency outcomes. This work has also identified specific coordination mechanisms, control mechanisms, human resource, and industrial relations practices that serve to strengthen or weaken relational coordination. What this suggests is that a socially rich theory of market structures can be combined with a socially thin view of transactions to create a more comprehensive and potentially more robust conceptualization of the roles of ICT use in reshaping information-intensive work practices.

CONCLUSION

The dual-theoretic approach taken in this article provides a means to compare the kinds of insights offered by the two conceptual perspectives and to better delineate the conditions under which they are most useful. Our analysis suggests that such a dual-theoretic perspective provides a more rounded and balanced view of how ICTs modify transaction processes. In this final section we highlight several implications of our work for the practice of real-estate agents and research on transaction.

Implications for Practice

Our analysis suggests that disintermediation is less of a threat to agents than reintermediation, the replacement of one kind of intermediation with another. New value-adding players are beginning to take on parts of the role of the agent as aggregators. Some of these new intermediaries are traditional players taking on larger roles, such as local real-estate franchises. Other sources of reintermediation are the myriad of web-based service providers. Perhaps the most notable new entrant may be Microsoft, which apparently seeks to leverage its technical competence and use of the web as a means to become an intermediary—a techno-centric approach seemingly driven by a transaction-costs perspective on real-estate (Crowston & Wigand, 1999). Thus the services provided by these new intermediaries are intended to lead to an unbundling of services, challenging the current percentage-based all-inclusive fee paid to agents at closing.

Some real-estate agents are also beginning to unbundle and specialize on certain aspects of their services. This is seen in the teaming approach (where one agents focuses on buyers and the second on listings). As we noted at the outset, similar developments—reintermediation and/or disintermediation—are observable in other industries as well. For example, travel agents also responded in part to the threat of disintermediation by unbundling their services. Some travel agents have started to charge flat service fees for booking a flight, making a hotel reservation, planning a travel itinerary, and so on. This trend suggests that real-estate agents might also start charging fees for specific services rendered rather than the current approach of collecting a single commission for a bundle of services. However, the findings from this research suggest that unbundling may not ultimately be to the advantage of the agent. In the real-estate industry, unbundling lessens the agent's role as a coordinator of the entire transaction process and in turn weakens the strategic positioning and the degree of control possessed by the real-estate agent in the value chain of the transaction. It may be that real-estate agents are very different from travel agents and stockbrokers because they often connect people and develop and maintain relationships in addition to coordinating the flow of information.

For real-estate agents, the increasing use of ICT provides a means to extend their social networks and thereby increase the potential for social capital formation. Further, there are opportunities for real-estate agents to exploit ICT to add more transaction support. For instance, there are numerous local services conceivable that only real-estate agents might be able to offer. These include developing locally oriented sites that are available only to clients of agents and provide value-added information about local issues such a neighborhood data, school quality, sale/resale history, and so on. Much of this data is currently provided free from the National Association of Realtors site (www.realtor.com) and other sites. The data from our research suggests that the agents may be better positioned if they restrict access to such data to clients (such as the efforts by the site maintainers to minimize the ability of people to easily gather large data sets from www.realtor.com). Moreover, the agents will be continually challenged to identify those services, possibly entirely new and previously unoffered services that add such value for their clients.

Implications for Research

This research suggests that our understanding of the impact of using ICTs on transaction can differ depending on the conceptual perspective taken. From a transaction-cost perspective, the real-estate industry is not very different from other industries where disintermediation has already started occurring. Hence this perspective prompts us to think that disintermediation is very likely in the real-estate business. A social-capital view of the same set of changes provides a different view of transactions. This perspective suggests that the value in using ICT is in part to enhance the building and maintenance of social capital. Situating the transaction within the context where it occurs highlights the importance of social networks and the roles that using ICT play in maintenance of these networks. This perspective brings to the forefront the ways in which participants interact, and it seems that the uses of ICT do not depersonalize service in real-estate, but rather allow agents to maintain contact. Thus the uses of ICT can actually strengthen real-estate agents' social networks, expand their social capital, and make them less dispensable to the transaction.

Evidence of the importance of context and the network of relations in which transactions occur is increasingly entering the literature on ICT-enabled commerce. For example, Pisanias and Willcocks (1999) describe how social relations and personal networks are so pervasive and important in the ship brokering industry that ICT-enabled market-making mechanisms have failed. Barrett

and Heracleous's (1999) analysis of ICT use in the London insurance market shows that, again, the importance of social capital and social networks. Since the initial ICT-based online trading systems did not reflect or enable existing social networks, they were not widely used and hence they did not radically change the practice of insurance. On the other hand, smaller scale systems that did reflect existing social structures were used and have become embedded in the structures that now exist.

Understanding how social capital is affected by ICT use provides a means to relate the work of agents to their roles as intermediaries during the buy/sell transactions. ICT use can affect all three components of social capital. For example, agents can use ICT, such as integrated voice mail, pager, and cell phone, to develop and maintain their network of weak and strong ties. Use of ICT can also alter the relational aspects of social capital. Our work findings suggest that real-estate agents who use ICT to buffer themselves from clients (not returning calls, not checking/responding to e-mail, not maintaining a current web site) weaken their relations. And ICT use can alter what is expected of an agent. For example, many prospective sellers expect that an agent will provide a web presence for their listing, going beyond traditional advertising media.

A socially thin view of the residential real-estate closing treats this effort as a market-based transaction. Such a perspective provides a limited approximation to the changes wrought by ICT. This view may also misrepresent the more nuanced aspects of the adaptations being made. Such a perspective suggests that agents will seek to minimize transaction costs, may focus on unbundling services to do so, and will treat information as a commodity. This line of thinking leads to offhand analyses of real-estate transactions, such as that made by Bakos (1998).

A socially rich view on the same phenomena highlights a different set of uses of ICT. This perspective puts the spotlight on the ways in which ICT are used to build and draw on the social relationships that underpin the actual transactions, to help guide the process of closing, and to invoke expertise as needed. The socially rich perspective highlights the communicative aspects of information and emphasizes the embedded nature of information and the importance of having links to these sources and the awareness to use them. Such a perspective provides insights into the behavior of participants in marketlike transactions and helps to explain the reason why an increasing number of empirical studies fail to find the types of disintermediation predicted by socially thin views of electronic commerce.

NOTES

1. By electronic commerce we mean the uses of various technologies (typically online) to search shop for, compare, purchase, track, and maintain orders and transactions (see Wigand, 1997a).

2. The commercial real-estate industry in the United States operates with different regulations regarding the agent–buyer–seller relationship and access to information. For more details on this aspect of the real estate industry, see Lamb (1997).

3. Readers interested in seeing the explanatory event matrices are encouraged to contact the lead author.

4. The data collection approaches of fieldwork are often the means by which ethnography is done. However, the use of fieldwork here was to provide us the types of data to develop the contrasts among the two perspectives. Thus the analysis presented in this article is not intended to provide a rich description or to "transport" the reader to the field.

REFERENCES

Allstate to lay off 4,000 workers. 1999. *Syracuse Post-Standard*, November 11, p. C-4.

Baen, J., and Guttery, R. 1997. The coming downsizing of real estate: Implications of technology. *Journal of Real Estate Portfolio Management* 3(1):1–18.

Baker, W. 1984. The social structure of a national securities market. *American Journal of Sociology* 89:775–811.

Bakos, Y. 1998. The emerging role of electronic marketplaces on the Internet. *Communications of the ACM* 41(8):35–42.

Barrett, M., and Heracleous, M. 1999. *Globalization as a structurational process: The local–global dialectic in the context of the London insurance market*. Paper presented at the Academy of Management Conference, Chicago, August.

Battey, J. 2000. By the numbers. *InfoWorld*, February 21, p. 18.

Becker, G. S. 1975. *Human capital: A theoretical and empirical analysis*, 2nd ed. New York: National Bureau of Economic Research.

Benjamin, R., and Wigand, R. 1995. Electronic markets and virtual value chains on the information superhighway. *Sloan Management Review* 36(2):62–72.

Bottenberg, T. A. n.d. *Making the Internet Work for REALTORS® or, Getting serious about the Web*! IRED. ⟨http://www.ired.com/webbiz/abc0.htm⟩

Burt, R. 1988. The stability of American markets. *American Journal of Sociology* 93:356–395.

Burt, R. L. 1992. *Structural holes*. Cambridge, MA: Harvard University Press.

Burt, R. 1997. The contingent value of social capital. *Administrative Science Quarterly* 42:339–365.

Burt, R. 2000. The network structure of social capital. In *Research in organizational behavior*, eds. R. Sutton and B. Staw. Greenwich, CT: JAI Press.

Buxmann, P., and Gebauer, J. 1998. *Internet-based intermediaries—The case of the real estate market*. Paper presented at the Proceedings of the Sixth European Conference on Information Systems.

Chandler, A. D., Jr. 1962. *Strategy and structure: Chapters in the history of the American industrial enterprise*. Cambridge, MA: MIT Press.

Choudhury, V. 1997. Strategic choices in the development of interorganizational information systems. *Information Systems Research* 8(2):135–157.

Choudhury, V., Hartzel, K., and Konsynski, B. R. 1998. Uses and consequences of electronic markets: An empirical investigation in the aircraft parts. *MIS Quarterly* 22(4):471–507.

Coase, R. H. 1937. The nature of the firm. *Economica* 4:386–405.

Coleman, J. 1972. Systems of social exchange. *Journal of Mathematical Sociology* 2:145–163.

Coleman, J. S. 1988. Social capital in the creation of human capital. *American Journal of Sociology* 94:95–120.

Crowston, K. 1996. *Market-enabling Internet agents*. Paper presented at the Proceedings of the International Conference on Information Systems, Cleveland, OH, December.

Crowston, K., Sawyer, S., and Wigand, R. 2001. Investigating the interplay between structure and technology in the real estate industry. *Information, Technology and People* 14(2):163–182.

Crowston, K., and Wigand, R. 1999. Real estate war in cyberspace: An emerging electronic market? *International Journal of Electronic Markets* 9(1–2):1–8.

Doherty, J. 2000. Bye-Bye, middleman. *Barron's* 80(4):17.

Eisenberg, E., Farace, R., Monge, P., Bettinghaus, E., Kurchner-Hawkins, R., Miller, K., and Rothman, L. 1985. Communication linkages in interorganizational systems: Review and synthesis. In *Progress in communications sciences*, eds. B. Dervin and M. Voight, pp. 231–261. Norwood, NJ: Ablex.

Fisher, S. E. 2000. Internet shakeup for insurance. *InfoWorld*, February 21, pp. 34–35.

Fletcher, J. 1997. On the Web: What's your house worth? *Wall Street Journal*, September 26, p. B12.

Gellman, R. 1996. Dis-intermediation and the Internet. *Government Information Quarterly* 13(1):1–8.

Gittell, J. 2000a. Organizing work to support relational coordination. *International Journal of Human Resource Management* 11(3):517–534.

Gittell, J. 2000b. Paradox of coordination and control. *California Management Review* 42(3):1–17.

Gittell, J. H., and Weiss, L. 1997. *How organization design shapes informal networks: The case of patient care management*. Unpublished manuscript, Harvard Business School, Boston.

Granovetter, M. 1973. The strength of weak ties. *American Journal of Sociology* 78(6):1361–1381.

Granovetter, M. 1982. The strength of weak ties: A network theory revisited. In *Social structure and network analysis*, eds. N. Lin and P. V. Marsden, pp. 105–130. Beverly Hills, CA: Sage.

Granovetter, M. 1985. Economic action and social structure: The problem of embeddedness. *American Journal of Sociology* 91(3):481–510.

Granovetter, M. 1992. Problems of explanation in economic sociology, In *Networks and organisations: Structure, form, and action*, eds. N. Nohira and R. G. Eccles, pp. 25–56. Boston: Harvard Business School Press.

Grover, V., and Ramanlal, P. 1999. Six myths of information and markets: Information technology networks, electronic commerce, and the battle for consumer surplus. *MIS Quarterly* 23(4):465–495.

Hansen, M. 1999. The search-transfer problem: The role of weak ties in sharing knowledge across subunits. *Administrative Science Quarterly*. 44:82–111.

Harper, J. 1997. *How to fix the real estate web*. TechTrax. ⟨http://www.retechtrax.com/today.html, today2.html, today3.html, today4.html⟩

Hess, K., and Kemerer, C. 1994. Computerized loan origination systems: An industry case study of the electronic markets hypothesis. *MIS Quarterly* 18(3):251–275.

Jackson, B. 1987. *Fieldwork*. Urbana: University of Illinois Press.

Jacobs, J. 1961. *The death and life of great American cities*. New York: Random House.

Krackhardt, D. 1990. Assessing the political landscape: Structure, cognition, and power in organizations. *Administrative Science Quarterly* 35:342–369.

Krackhardt, D., and Stern, R. 1988. Informal networks and organizational crisis: An experimental simulation. *Social Psychology Quarterly* 51:123–140.

Kraut, R. E., Rice, R. E., Cool, C., and Fish, R. S. 1998. Varieties of social influence: The role of utility and norms in the success of a new communication medium. *Organization Science* 9(4):437–453.

Lamb, R. 1997. *Interorganizational relationships and information services: How technical and institutional environments influence data gathering practices*. Unpublished doctoral thesis, University of California, Irvine.

Lewis, I., Semeijn, J., and Talalayevsky, A. 1998. The impact of information technology on travel agents. *Transportation Journal* 37(4):20–25.

Lewis, I., and Talalayevsky, A. 1997. Travel agents: Threatened intermediaries? *Transportation Journal* 36(3):26–30.

Lohse, D. 1999. Allstate to launch online sales of car and home insurance. *Wall Street Journal*, November 11, p. B18.

Malone, T. W., and Smith, S. A. 1988. Modeling the performance of organizational structures. *Operations Research* 36(3):421–436.

Miles, M. 1979. Qualitative data as an attractive nuisance: The problem of analysis. *Administrative Science Quarterly* 24:590–600.

Miles, M. B., and Huberman, A. M. 1994. *Qualitative data analysis: An expanded sourcebook*, 2nd ed. Thousand Oaks, CA: Sage.

Milgrom, P., and Roberts, J. 1992. *Economics, organization and management*. Englewood Cliffs, NJ: Prentice Hall.

Myer, W. 1997. Mortgage originations in the U. S.*Virtual Finance International*, October 1, p. 8.

National Association of Realtors. 1998. *You own it . . . protect it*! [Video]. Washington, DC: National Association of Realtors.

Neches, R., Neches, A.-L., Postel, P., Tenenbaum, J. M., and Frank, R. n.d. *Electronic commerce on the Internet*. USC Information Sciences Institute. ⟨http://info.broker.isi.edu/fast/articles/EC-on-Internet.html⟩

Nelson, K. 1998. Home on the net: Electronic commerce infiltrates real-estate sales. *Sales and Field Force Automation* June:58–60.

Overby, S. 1997. Home: A loan. *Internet Shopper* Winter:27–34.

Perotin, M. M. 2001. Vacationer's first trip: The Internet. *Syracuse Post-Standard* July 25, p. D-9.

Pisanias, N., and Willcocks, L. 1999. Understanding slow Internet adoption: "Infomediation" in ship-broking markets. *Journal of Information Technology* 14(4):399–413.

Powell, W. W. 1990. Neither market nor hierarchy: Network forms of organisations. In *Research in organisational behaviour*, eds. B. Staw and L. L. Cummings, pp. 295–336. Greenwich, CT: JAI Press.

Powell, W., and Smith-Doerr, L. 1994. Networks and economic life. In *Handbook of economic sociology*, eds. N. Smelser and R. Swedberg, pp. 368–402. Princeton, NJ: Princeton University Press.

Putnam, R. D. 1993. The prosperous community: Social capital and public life. *American Prospect* 13:35–42.

Putnam, R. D. 1995. Bowling alone. *Journal of Democracy* 6:65–78.

Sarkar, M. B., Butler, B., and Steinfield, C. 1995. Intermediaries and cybermediaries: A continuing role for mediating players in the

electronic market place. *Journal of Computer-Mediated Communication* 1(3). ⟨http://www.ascusc.org/jcmc/vol1/issue3/sarkar.html⟩

Sawyer, S., Crowston, K., and Wigand, R. 1999. *ICT in the real estate industry: Agents and social capital*. Paper presented at the Advances in Social Informatics and Information Systems Track, Americas Conference on Information Systems, Milwaukee, WI, August.

Schmitz, S. 2000. The effects of electronic commerce on the structure of intermediation. *Journal of Computer-Mediated Communication* 5(3). ⟨http://www.ascusc.org/jcmc/vol5/issue3/schmitz.html⟩

Seidler, J. 1974. On using informants: A technique for collecting quantitative data and controlling measurement error in organization analysis. *American Sociological Review* 39(12):816–831.

Self, T. 1997. *The agent and the web*. IRED. ⟨http://www.ired.com/web-biz/agents0.htm⟩

Swedberg, R. 1994. Markets as social structures. In *Handbook of economic sociology*, eds. R. Smelser and R. Swedberg, pp. 256–282. Princeton, NJ: Russell Sage Foundation.

Travel agents threatened by online rivals. 1999. *Syracuse Post-Standard*, November 16, p. C-6.

Tsai, W., and Ghoshal, S. 1998. Social capital and value creation: The role of intrafirm networks. *Academy of Management Journal* 41(4):464–476.

Tucillo, J. 1997. Technology and the housing markets. *Business Economics* 32(3):17–20.

Wellman, B. 1988. Structural analysis: from method and metaphor to theory and substance. In *Social structures: A network approach*, eds. B. Wellman and S. Berkowitz, pp. 19–61. New York: Cambridge University Press.

White, H. 1981. Where do markets come from? *American Journal of Sociology* 87:517–547.

Wigand, R. 1988. Communication network analysis: A history and overview. In *Handbook of organizational communication*, eds. Gerald Goldhaber and George Barnett, pp. 319–358. Norwood, NJ: Ablex.

Wigand, R. T. 1997a. Electronic commerce: Definition, theory and context. *The Information Society* 13(3):1–16.

Wigand, R. T. 1997b. Electronic data interchange: A transaction cost perspective. *EDI Forum* 10(1):60–65.

Wigand, R. T., Picot, A., and Reichwald, R. 1997. *Information, organization and management: Expanding markets and corporate boundaries*. Chichester, England: John Wiley and Sons.

Williamson, O. E. 1981. The economics of organization: The transaction cost approach. *American Journal of Sociology* 87(3):548–577.