LONGING TO BELONG: IDENTITY AND ORGANIZATION THEORY

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ABSTRACT

This dissertation consists of the first three papers in a stream of organization theory research inspired by the insight that humans are as motivated by identity self interest – or the "longing to belong" – as by instrumental self interest. The first paper spells out this insight and its implications for the governance of knowledge intensive organizations; the second paper offers an empirical test of the fundamental assumption that a continuum of motivation influences governance arrangements; and the third paper uses a historical case study to refine process theories of organization by emphasizing the struggle for dominance between identity groups and their logics.

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Thank you all!

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CHAPTER 1

THE LONGING TO BELONG STREAM OF RESEARCH

This dissertation consists of the first three papers in a stream of organization theory research inspired by the insight that humans are as motivated by identity self interest – or the "longing to belong" – as by instrumental self interest. The first paper spells out this insight and its implications for the governance of knowledge intensive organizations; the second paper offers an empirical test of the fundamental assumption that a continuum of motivation influences governance arrangements; and the third paper uses a historical case study to refine process theories of organization by emphasizing the struggle for dominance between identity groups and their logics. Together, these three papers lay the groundwork for a series of subsequent papers.

Inspired equally by the proliferation of open innovation systems and the persistence of cooperatives, my aim is to contribute to the project of articulating the micro-foundations of organizational theory (Felin, Foss, 2009) by using embeddedness, evolutionary psychology and social identity insights to revisit established pillars of organizational theory. In the end, I hope to articulate elements of a theory of governance that reflects both the demands of knowledge intensity and the constraints of a deeper understanding of human nature – a theory that recognizes the fundamental sociability of human actors.

The following section outlines the motivation for the *longing to belong* project and sketches the argument for the central role of identity self interest. The succeeding sections then summarize the three papers that make up the dissertation and outline the theoretical and empirical work that will build on these foundational papers.

Identity and Organization Theory

Established organization theory struggles to explain cooperative innovations in organizational forms, such as alliances, open source systems and even cooperatives (Walsh, Meyer, Schoonhoven, 2006). It also often suffers from a static approach that neglects how organization is performed, embroidered and transformed over time (Feldman, 2000, Feldman, Pentland, 2003, Sydow, Schreyogg, Koch, 2009, Van de Ven, Poole, 2005).

Central to both the strength and weakness of much of organization theory, especially transaction cost economics, are strong micro-foundational assumptions about humans as atomized individuals driven by instrumental self interest, constrained by bounded rationality, and operating as part of firms that are a nexus of transactions governed by a variety of contracts (Coase, 1937, Williamson, 1991, Williamson, 1993, Williamson, 1994). These assumptions have been challenged implicitly and explicitly by the knowledge-based view of the firm with its recognition of the ways in which firms foster social communities that generate, retain and coordinate value-creating knowledge (Kogut, Zander, 1992, Nahapiet, Ghoshal, 1998, Nonaka, Toyama, Nagata, 2000); by Ostrom's extensive study of commons regimes and the central role of social communities

and common identities in the governance of organizations (Ostrom, 1999, Ostrom, 2006); and by the existence of network forms of organization that are neither market, hierarchy nor hybrid (Powell, 1990, Powell, Koput, Smith-Doerr, 1996).

These challenges have been sharpened by the increase in importance of knowledge that is at once tacit and joint, embedded within the social fabric of networks of skilled individuals (Anand, Gardner, Morris, 2007, Nahapiet, Ghoshal, 1998, Nonaka*, et al.*, 2000). When critical knowledge is both tacit and joint, managers – and organization theory – can no longer assume individual ownership of ideas and effort (Hart, Moore, 1990) or expect the accurate metering of individual contributions (Williamson, 1981). Further complicating matters, the generation and sharing of such tacit, joint knowledge seems to depend on intrinsic, non-pecuniary motivators that sit uncomfortably with, and can be diminished by, the extrinsic motivators common to both markets and hierarchies (Deci, Koestner, Ryan, 1999, Mudambi, Mudambi, Navarra, 2007, Osterloh, Frey, 2000). Even the search for knowledge workers (Florida, 2005) is hindered by the difficulty of creating a market for knowledge because the value of new knowledge – especially tacit, joint knowledge – cannot be known until the purchaser has obtained the knowledge (Arrow, 1962). In short, as the transaction environment becomes more knowledge-intensive, managers find it increasingly difficult to determine how best to motivate and organize cooperation among members of creative teams who must work jointly to be successful (Poppo, Zhou, Zenger, 2008).

One solution to these organizational challenges has been a rapid proliferation of alternative, more cooperative forms of organization, ranging from clans to alliances to open innovation systems, all of which rely on various forms of relational governance. Relational governance has been defined as "a social institution that governs and guides exchange partners on the basis of cooperative norms and collaborative activities" (Poppo et al., 2008: 1197) and has been widely accepted as part of effective governance of markets, firms and networks (Baker, Gibbons, Murphy, 2002, Powell, 1990). Whereas the assumption underlying market and hierarchy forms of governance is that cooperation is achieved through aligning the interests of opportunistic individuals, the assumption underlying relational governance forms such as clans is that cooperation can be achieved through socialization into an identity group with common goals (Ouchi, 1980); relational governance depends on creating a common interest rather than harnessing multiple interests. Similarly, while hierarchy and market assume more or less bounded rationality, the notion of relational governance assumes the possibility of a group-constrained rationality, or at least a common cognitive map of what is important and real (Garud, Rappa, 1994, Kuhn, 1970). While foreign to mainstream economics and organization theory, the possibility of group identity and group think is a key part of a number of more sociological theories, suggesting a continuum of assumptions about social structure, rationality and, implicitly, motivation.

Table 1-1. The Continuum of Human Experience in Social Science Theory

	Classical Economics "Homo economicus" **(Smith, 1789)**	***Transaction Cost Economics*** **(Williamson, 1981)**	***Economic Sociology*** **(Granovetter, 1985)**	***Normative Sociology "Homo sociologicus"*** **(Durkheim, 1938)**
Social Structure	Autonomous Individuals	Partially Autonomous Individuals	Embedded Individuals	Fully Embedded Individuals
Cognition	Rationality	Bounded Rationality	Structured Rationality	Hegemonic Rationality (Groupthink)
Motivation	Instrumental Self Interest	Instrumental Self Interest	Identity Self Interest	Identity Self Interest

At the *homo economicus* extreme, the working assumption is that human actors are fully rational, atomized individuals whose instrumental, calculating pursuit of self-interest must be harnessed and coordinated if they are to work together (Smith, 1789). Recalling Knight's admonition to pay more attention to "human nature as we know it" (Williamson, 1981: 549), transaction cost economics modifies the *homo economicus* extreme by recognizing the boundedness of rationality and the dangers of opportunism. Bounded rationality prevents the writing of complete contracts and so necessitates some sort of ongoing controls (prices, procedures, feedback loops) to facilitate adaptation to unforeseen changes (March, Simon, 1958). Opportunism – "self-interest seeking with guile" – at once enhances motivation and complicates coordination and control (Williamson, 1981: 554, Williamson, 1993, Williamson, 2002). Given the motivational power of instrumental self-interest and the bounded rationality limits on contracting, formal organization in the form of market, hybrid or hierarchy is required to harness individual and to govern transactions (Williamson, 1991).

At the *homo sociologicus* extreme, human actors are seen as so interdependent that social structure dictates individual behavior, perception, cognition and motivation. As a result,

individuals follow prevailing social norms more or less blindly and with little regard for individual self-interest (Ng, Tseng, 2008, Weale, 1992). Accordingly, collective identity coordinates and harmonizes individual actions by replacing individual goals and perceptions with collective goals and perceptions (Durkheim, 1938, Ouchi, 1980). Just as transaction cost economics modifies the *homo economicus* extreme, so does the embeddedness perspective modify the *homo sociologicus* extreme. The embeddedness view is that individuals are embedded in and shaped by concrete, ongoing systems of social relationships *without* being completely controlled by those relationships and the accompanying norms and roles (Granovetter, 1985). "…Individual behavior is always mediated by social relations [that] are as much a part of the description of reality as is individual behavior" (Arrow, 1994: 5).

Taken together, this continuum of theory suggests that scholars working in various traditions are simply emphasizing different aspects of human nature, and so that we are at once economic and social creatures. Human actors are *both* autonomous beings who maximize self-interest through independent, rational action *and* embedded social beings whose perception and pursuit of self interest are shaped by the groups to which they belong (Loch, Galunic, Schneider, 2006, Ng, Tseng, 2008). Depending on the context (the labile behavior of adolescents comes readily to mind), human cognition can be marvelously autonomous and calculative or nearly robotically programmed by groupthink; depending on the situation, human behavior can be dramatically opportunistic or emphatically conformist; in all situations, we would argue, human behavior reflects the tension between individual- and group-directed goal-seeking.

Assuming that humans experience the world at once as individual and as members of groups, I propose that instrumental self interest ("what's in it for me?") is complemented by an existential, identity-driven self interest ("who am I in relation to those around me?"). That is, while instrumental, opportunistic self-interest remains a powerful and ubiquitous motivator of individual behavior, it is augmented by an equally powerful motivation to associate with and support the group with which one identifies (Akerlof, Kranton, 2005, Loch*, et al.*, 2006, Widegren, 1997). Phenomenologically, we experience this duality as a "basic dichotomy between self-interest and the longing to belong" (Kogut, Zander, 1996: 502), and we observe the "longing to belong" in the extraordinary intensity with which humans strive to achieve acceptance by the group (Shapiro, 2005, Wrong, 1961).

Empirically, there is a wealth of literature from economics, political science, psychology and sociology that suggests that in any given population at any given time, some actors act in completely self-regarding ways while others demonstrate strong reciprocity (the tendency to cooperate with others, and to enforce cooperation, even at significant personal cost) (Fehr, Gintis, 2007). Choi & Bowles (2007) even argue that an extreme form of parochialism – marked by the willingness to die for one's group – may have co-evolved along with more opportunistic self-interest to drive the emergence of cooperative social structures. Indeed, evolutionary psychologists suggest that human cognitive architecture is more suited to managing social exchanges within coalitions than it is to managing the rational calculations assumed in models of autonomous individuals

(Cosmides, Tooby, 1994). Similarly, surveys of evolutionary biologists' work on brain size suggest that the large size of human (and primate) brains is the result of the demands for processing social interconnections, especially the preservation of social coherence in intensely bonded groups, not calculation (Dunbar, 2003, Dunbar, Schultz, 2007). Further, Tooby et al (2006) report on experiments that suggest that because cooperation is often necessary to meet basic needs, human minds have evolved to value the existence of the group for its own sake; to notice and punish free riding; and to reward those who cooperate in maintaining the identity and integrity of the group. Similarly, experiments show that humans exhibit strongly negative emotional reactions to free-riding – and will punish free riding even at personal cost (and with no prospect of personal gain) (Fehr, Gachter, 2002).

At a higher level of abstraction, social identity theorists suggest a mechanism that links individual search for identity with the longing to belong to one's group. They describe the search for identity as the search for self-esteem enhancement and uncertainty reduction through "trying on" self-defined prototypes until finding one that brings self-perception and behavior in line with salient group exemplars (Bartel, 2001, Hogg, Terry, 2000). In turn, the group exemplars that constrain and guide individual search are rooted in shared cognitions developed iteratively and interactively through the ongoing collection of individual searches. The search for, and development of, a collective identity is evident in the phenomenon of informal organization. Collective work creates common experiences and collective narratives that drive the evolution of shared meaning, identity and social norms among organization members (Boje, 1991, Boje, 1995, Hardy,

Lawrence, Grant, 2005). Over time, co-workers develop a powerful sense of bounded collective identity and belongingness that promotes solidarity – experienced as warmth, intimacy, emotional support, psychological commitment, trust, shared norms and expectations for mutual assistance (Harrison, *et al.*, 2002, Ring, Van de Ven, 1994, Widegren, 1997). In turn, this identity and belongingness facilitates the back-and-forth flow of resources, learning, horizontal coordination and the development of social capital (Hardy, *et al.*, 2005, Oh, Chung, Labianca, 2004). Or as Gächter & Fehr (1999: 362) conclude from their experimental studies of collective action, "… group identity is like a 'lubricant' that makes social exchange effective."

Pragmatically, group identification and a sense of belonging leads to more job-related cooperation among organizational members (Aguilera, *et al.*, 2007, De Cremer, Blader, 2006). Further, potential collaborators from different organizations can, through the negotiation of relationships and interests and the sharing of common experience and stories, generate trans-organizational identities that enable effective learning and collaboration in the space between formal organizations (Hardy, *et al.*, 2005, Jones, Hesterly, Borgatti, 1997, Oh, *et al.*, 2004, Ring, Van de Ven, 1994, Tsai, Ghoshal, 1998). In turn, these trans-organizational identities knit together the networks, alliances and dispersed communities of practice that are increasingly common and important fixtures on the organizational landscape (Brown, Duguid, 1991, Brown, Duguid, 2001, Kodama, 2005, Powell, *et al.*, 1996).

Critically, the creation and enactment of identities are shaped by institutional logics, those "broad cultural beliefs and rules that structure cognition and fundamentally shape decision making and action in a field" (Marquis, Lounsbury, 2007: 799). While commonly described at the level of the organizational field (Thornton, 2004, Thornton, Ocasio, 1999), the concept of logics has also been applied effectively to boundary-spanning communities of practice such as social movement networks (Lounsbury, 2001) (and professions (Greenwood, Suddaby, 2006). The logics of professional guilds (Mudambi, Swift, 2009) and other identity-based communities of practice emerge from a process of acculturation into shared value systems, boundary markers, exemplary practices, cognitive maps and relationships (Brown, Duguid, 2001, Kuhn, 1970). Evident at both field and identity group levels of analysis, the concept of logics provide a conceptual bridge across the levels of institution, organization, identity group, and individual: How actors perceive, think and act is shaped by the logics of the nested groups, organizations and institutions in which these actors are embedded.

These layers of logics at once shape and are subtly elaborated and varied by the stories actors tell. As with many human activities, organization seems to be performed, experienced and recounted as evolving narratives: The stories humans tell ourselves and each other are central to articulating, negotiating and reconciling interests, identities and roles in an organization (Hardy*, et al.*, 2005). Indeed, the stories we tell seem to be central to our personal identities (and the identities we ascribe to others) (Creed, Scully, Austin, 2002) and perhaps even the experience of consciousness itself (Crites, 1971). As storytelling actors within organizations, humans create organizational coherence by

telling and trying out contending stories until a dominant story emerges and is reinforced by structures, rewards and power structures, all controlled by the now dominant elite (Greenwood, Suddaby, 2006, Maguire, Hardy, 2006, Phillips, Lawrence, Hardy, 2004). But while organization coalesces around a dominant story, organizations always contain additional stories, each told by identity groups with their own interests and logics and ambition to shape organizational reality (Boje, Oswick, Ford, 2004, Dawson, Buchanan, 2005). That is, for every dominant organizing story and elite group, there are other stories and identity groups with their own distinctive logics and their own desire to organize through and around their narratives of what is valuable and real. Thus, the process of organization can be seen as a multi-vocal contest between narratives anchored in identity groups guided by their own distinctive logics (Buchanan, Dawson, 2007).

Given this view of the organization as a logics contest between identity groups, managers seeking to motivate – and theorists seeking to understand – collective action would do well to attend to the continuum of motivations from opportunistic, instrumental self-interest to longing-to-belong identity self-interest. At the instrumental extreme, independent individuals are motivated solely by extrinsic, pecuniary motivators, with only instrumental regard for the interests of others. At this extreme, individuals' goals often diverge, not only from those of others, but also from those of the organization. Such divergence generates variety, but makes it difficult to engage in concerted action. Thus, the challenge at this extreme is to align interests – through market incentives or hierarchical fiat – well enough to enable the cooperative creation of economic value.

At the identity extreme, individuals identify with a larger collectivity and individual goals are conditioned by group goals. Such identity-influenced goal congruence supports concerted action, but at the risk of groups becoming sclerotic, parochial and resistant to external inputs. Worse, at this extreme, groups may fracture into partisan sub-groups, each committed to advancing its own agenda. The challenge at this extreme is thus to align group identities – through clan socialization or political negotiation – to support the cooperative creation of economic value.

The view of the organization as a logics contest between identity groups has implications for managers seeking to manage change – and theorists seeking to understand organizational change. Paying attention to the process through which identities are continually articulated, contested and reconciled in organizational contexts promises to provide insight into the evolution of both strategy and organization as firms struggle to respond to continual, sometimes rapid, change in the economic, competitive and technological contexts. Firms struggle to manage innovation and concomitant organizational change because the fundamental direction and organization of firms are so difficult to alter. (Christensen, 1997, Henderson, Clark, 1990, Hill, Rothaermel, 2003). To the extent that strategic success depends on achieving internal fit between strategy and structure and external fit between strategy and context (Argyres, Bigelow, 2007, Miles*, et al.*, 1978, Porter, 1985, Siggelkow, 2001), change is obstructed. This is because the very articulation of strategic fit results in system stability and resistance to change (Gresov, Haveman, Olivia, 1993, Sydow*, et al.*, 2009); because organizations seem to settle into strategic paths (Nelson, Winter, 1982, Nickerson, Silverman, 2003, Tripsas, 2009, van

Driel, Devos, 2007); and because range of possible choices about technology and organization are constrained by the technological paths and institutional logics in which actors are embedded (Aldrich, Fiol, 1994, Garud, Karnoe, 2003, Thornton, 2004).

The organizational change literature suggests that shifting onto new paths requires both external shocks and leaders who are sufficiently self-reflective, influential and powerful to declare a crisis and articulate and execute a new direction with wholesale changes in strategy, structure, incentives and culture (Romanelli, Tushman, 1994, Rosenbloom, 2000). While well accepted, this narrative of change begs the question of "embedded agency" (Greenwood, Suddaby, 2006, Seo, Creed, 2002): It does not explain how actors perceive, much less change, the group, organizational, technological or institutional contexts that shape them (Holm, 1995). There is, in short, a lack of clarity about the internal processes through which embedded actors generate and advocate for changes in organizational and field level structures (Garud, Gehman, Kumaraswamy, forthcoming, Lounsbury, 2007). But focusing on the political interactions of identity groups as played out through contending logics promises insight into these processes, including the ways in which tension between identity groups can generate change from within.

The Longing to Belong Papers: Theory, Empirical Test and Extension

The first paper in this dissertation proposes a friendly amendment to transaction cost economics and so a market, hierarchy, clan, organizational democracy matrix of organization forms; the second offers an empirical test of the claim that a continuum of motivation influences governance choices; and the third paper uses a historical case study

to synthesize several streams of thought into a theory about *how* organization arises from the interaction between identity groups.

Paper 1: Longing to Belong and the Governance of Knowledge-Intensive Organizations develops theory to account for innovations in organizational form – such as network organizations, cooperatives, and open-source communities – in knowledge-intensive settings. Drawing on transaction cost, commons, economic sociology, and social identity theories, the paper argues that humans are at once economic and social creatures, at once autonomous beings who maximize self-interest through independent, rational action and embedded social beings whose perception and pursuit of self interest are shaped by the groups to which they belong. Building on this insight, I propose dual dimensions of coordination and cooperation, animated by the tension between instrumental and identity self interest, to complement the well-established, transaction-based understanding of organizational governance. I then propose that the market-hierarchy continuum be re-thought as market, hierarchy, clan, organizational democracy array of organizational forms. The resulting taxonomy offers insight into the fit between organizational forms and underlying knowledge requirements as well as into the evolution of organizational forms in response to changing knowledge environments.

This paper offers a contingency model to classify and explain the amazing variety of organizational forms – including alliances, networks, open-source communities and cooperative systems – used to manage increasingly knowledge-intensive organizations. It suggests that managers can facilitate collective action not just by aligning individuals'

interests but by leveraging the identity groups that form among and structure any collection of individuals. Further, the leveraging of identity self interest is particularly valuable when the knowledge required for performance is knowledge that must be developed jointly. In such situations, the organizations that leverage identity self interest – clans and organizational democracies – gain an efficiency advantage over those – markets and hierarchies – that assume instrumental self interest. Arraying organization forms across a coordination/cooperation matrix makes it possible to classify a variety of common intermediate forms and trace the dynamics that shape the evolution of organizational forms in specific institutional and industry contexts.

Paper 2: Knows Me and My Business: How Preference for Relational Governance Mechanisms Affects Small Firm Owners' Choice of Banks is a straightforward empirical test of the existence and impact of the motivational continuum proposed in the first paper. This paper considers the possibility that business decisions are shaped as much by the longing to belong as by the pursuit of a good deal by exploring the relative importance of relational and economic preferences in small business owners' choice of a primary bank. The data features direct measures of preferences and was sampled from the members of the National Federation of Independent Businesses at approximately six-year intervals over two decades. The findings show that both economic and relational criteria are significant when choosing a primary bank; that business owners' preference for relational versus economic governance affect the type of bank chosen; and that the distribution of these preferences across the population remains relatively stable over time. As such, the findings reinforce the role of social relations in shaping (but not dictating)

even the most straightforward economic decisions; highlight the continuum of instrumental and identity self interest that underpins business decision-making; and suggest that variations in such preferences are large and persistent enough to create significant and durable business opportunities.

Paper 3: Guilds and Organizational Change: Contested Logics in the Management of Innovation at Rohm and Haas draws from the history of R&D management at Rohm and Haas new insights into the process of organization and especially the ways in which organizational change is engendered endogenously from the tension between identity groups. The story that emerges from the firm's struggle to generate and maintain innovation during a century of scientific, competitive and institutional evolution highlights the collective, contested nature of the process of organization; provides insight into the subterranean tensions – especially between professional guilds – that animate organizational change; and suggests a mechanism for endogenous, dialectical change that helps to resolve the paradox of embedded agency. While managers often bemoan the effect of politics in organizations, the Rohm and Haas experience suggests that such politics are merely an expression of the fundamentally human search for identity through belonging. To the extent that guild membership is fundamental to the human condition, the contest between identity groups is yet another window into the phenomenon of cooperation and another dynamic for leaders to attend to when trying to facilitate productive collective action.

Contributions and Further Research

Together, these paper illustrate the promise of exploring the micro foundations of organization theory. In particular, the *longing to belong* approach combines the explanatory power of transaction cost economics' bottom-up, efficiency orientation with a more sophisticated understanding of the constraining forces identified by social psychology and sociology and of the process dynamics highlighted by process and social movement theorists. I hope that the *longing to belong perspective* will help scholars explain a broader diversity of organizational types – especially the community-based types that seem increasingly relevant in knowledge-intensive settings. Further, and especially in the third paper, this stream of work helps to articulate how embeddeness actually plays out over time in an organizational context, while contributing a possible solution to the problem of embedded agency.

While I believe that the first three papers make a significant contribution to organization theory, there is much more that I hope to contribute to our understanding of collective action, especially in settings in which joint effort is required or desired.

Theory Extensions

As knowledge intensity increases and there is more call for joint production by knowledge workers, knowledge generating subsidiaries and the like, I believe that variations on organizational democracy, including commons and trade networks, will become ever more prevalent and elaborate. As such forms proliferate, it could be useful to mine the political science, legal and sociology literatures to develop a deeper

understanding of the essential components of commons, trade networks and democratic organizational structures. It would also be useful to augment theoretical exploration with detailed case studies of the full range of democratic organizations, including mixed forms such as the Mondragon system and many universities.

Another promising application and extension of the *longing to belong* project concerns the *management* of open innovation systems. Based on work for the GSK's Consumer Products Division, Youngjin Yoo and I have proposed that open innovation can be managed in four ways: Market, incubator, community and clan (Yoo, Hill, 2010). Each management model thrives under specific conditions of exchange and communication, and each has implications for the appropriation and distribution of the value created by the system .The form, or combination of forms, that is most effective depends on the underlying knowledge base, the types of exchange required, and the desired distribution of value. What is most promising about this application is the intersection with the literatures on open innovation systems (Chesbrough, Vanhaverbeke, West, 2006), "democratizing innovation" (von Hippel, 2005), and architectural control points (West, Gallagher, 2006) – especially the control of value generated by open systems.

More generally, the issue of value appropriation is underdeveloped in the current *longing to belong* papers. That is, to the extent that firms are increasingly dependent on the creative, joint work of knowledge-producing teams, the power dynamics surrounding the distribution of value are changing such that it is less clear whether increased value (above normal returns) will be distributed to shareholders or redirected into increased pay for

critical workers, unusually high executive compensation, side loans to family members, pay offs to government or community groups, extra resources for certain subsidiaries or the like (Coff, 1999, Mudambi, Navarra, 2004). Settling the distribution issues – and the organizational arrangement that support them – seems critical and suggests the opportunity for further work concerning property rights, political claims, and the appropriation of the wealth generated by organizational democracy and its hybrids.

Turning to extensions of the *longing to belong* insights into the process of organization, it seems possible that logics might be as fundamental a unit of analysis for understanding organization as routines have proven to be. Routines are repetitive, collectively understood and performed patterns of behavior that facilitate tasks while shaping perception and cognition as well as behavior; routines are learned through doing and reinforced through regular performance; and yet the performance of routines is always somewhat idiosyncratic leading to variation, contradictions and the possibility of change (Feldman, 2000, Feldman, Pentland, 2003). Similarly, logics are learned through doing; shape perception, cognition and behavior; and are performed as stories, thereby both reinforcing themselves and generating the possibility of variation, contradiction and change. The critical difference between routines and logics seems to be that routines are tied to tasks and the task environment while logics are tied to groups and identity. That is, routines arise from collective action while logics arise from the collective search for identity. Thus, to the extent that organizations are arenas for both action and identity, it seems important to understand both routines and logics. For example, studying the

interaction between professional guild logics and innovation routines – such as the stage gate process – might provide rich insight into the management of innovation.

Methodologically, to the extent that it is productive to conceptualize organization and change as a struggle between identity groups and their respective logics, it could be useful to borrow methods from anthropology and history and to analyze firm and guild narratives hermeneutically, looking for residues of past stories and actions, identifying current shifts in usage, and discerning the logics each reveal (See, for example, Ricouer, 1981). Further, an analysis of forces and narrative threads running through current stories and identity group logics might shed light on the trajectory of future evolution, including the likelihood of shifting onto to a new technological or organizational path. Finally, because of the importance of narrative, semantic network analysis techniques could be employed to track the rise, fall and synthesis of guild logics (Corman*, et al.*, 2002, Dooley, Corman, 2002).

Tests and Applications

Beyond theoretical and case-based elaborations of theory based on the *longing to belong* insights, I look forward to a series of empirical tests of the model. The most critical test would be whether managerial choice of organizational form does, in fact, lead to differential survival and performance, given variation in the underlying task and motivation environments. Following Ouchi, who gave up on explaining schools thirty years ago only to return to them recently (Ouchi, 1980, Ouchi, 2006), I am particularly interested in whether the proposed model might help make sense of the organizational

(il)logic of public schools and especially the performance differentials between public, private, parochial and experimental schools. In a similar vein, this framework could perhaps also be used to understand better the complex, nested and increasingly networked structures of large multinational firms. For instance, the model could help predict the conditions under which a particular corporation might best be organized as a market of firms, a network of work groups, a democracy of clans or another combination that fits a given transactional and social structural context.

On the process side, to the extent that organization is in large part driven by contests between identity groups, it seems likely that boundary spanning actors would figure prominently in both the struggle and the temporary reconciliations that support the interactive, iterative creation of a shared story of organization (Carlile, 2002, Gutierrez, Howard-Grenfille, Scully, 2010, Whittle, Suhomlinova, Mueller, 2010). Given the Rohm and Haas experience, I would expect to find such boundary spanners playing important roles in perceiving contradictions between logics; in inspiring others to engage in the collective struggle for change; in the cultivation and management of the logics contest between guilds; and in facilitating syntheses. In this context, the function and process of boundary spanning and other network roles – as opposed to the architecture of networks – deserves more research attention.

The *longing to belong* approach also promises insights for entrepreneurship theory. One of the implications of the second paper is that both the persistence of some small banks and the launching of new small banks may be related, at least in part, to the stable desire

among a significant portion of business owners for genuinely relationship-based banking. This possibility has implications for entrepreneurial theory in that it suggests that social realities can shape entrepreneurial opportunities. Whereas many theories of entrepreneurship posit that opportunities arise because of discontinuous and unpredictable change in the underlying technological and economic infrastructure (Baumol, 2004, Schumpeter, 1950, Shane, Venkataraman, 2000), opportunities may also arise from shifts in social patterns – a possibility most clearly evident in the phenomenon of social entrepreneurship (Hill, Kothari, Shea, 2010). Exploring the persistent preference for relational governance of economic exchange and the identity-based logics of organization might support deeper understanding of the process through which entrepreneurial opportunities are enacted.

Perhaps most ambitiously, it would be interesting to try to tease out how fundamental the preference for relational governance really is. Is it a characteristic of some people or does it exist as competing, or even complementary, tendencies within each of us – tendencies rooted in fundamental motivations involving goal seeking through identity and goal seeking through instrumental self interest? If so, there would be both scholarly and managerial value in tracing the interplay between motivations as well as the conditions that favor one motivation over another – within actors (as they are embedded in groups and organizations), within populations, and over time. Towards this end, laboratory studies that combine decision making with imaging of brain activity might be especially telling.

Looking Ahead

Because of my own experience working in cooperatives, I started this dissertation inspired by Ouchi's observation that "[G]rain farmers who need a large grain elevator do not form corporations which take over farms and make farmers into employees; instead, they form a cooperative to own and operate the elevator." (Ouchi, 1980: 48) and by the intention to use this insight to try to organize the unruly, diverse constellation of established and emerging cooperative organizational forms into a unified, manageable framework. By integrating the core foundations of transaction cost economics and economic sociology, I was able to build such a framework and to propose that organizational democracy is particularly suited to the organization of knowledge-intensive activities in which the essential knowledge is both explicit and jointly created. As I explored these ideas, the framework provided useful insight into the dynamics animating the evolution of organizational forms and further insight into the process of organization. More importantly, as I look ahead, I see a long series of fascinating research projects building on this initial work. In the end, however, I will count this stream of work as successful if it establishes the continuum of motivation that spans opportunistic self-interest and the longing to belong as an important contribution to organization theory and to management practice. I also hope that this dissertation will contribute in a small way to the spread and success of sophisticated democratic and clan-based organizations.

CHAPTER 2

LONGING TO BELONG AND THE GOVERNANCE OF KNOWLEDGE-INTENSIVE ORGANIZATIONS

Abstract

We develop theory to account for innovations in organizational form – such as network organizations, cooperatives, and open-source communities – in knowledge-intensive settings. Drawing on transaction cost economics, commons, economic sociology, and social identity theories, we argue that humans are at once economic and social creatures, at once autonomous beings who maximize self-interest through independent, rational action and embedded social beings whose perception and pursuit of self interest are shaped by the groups to which they belong. Building on this insight, we propose dual dimensions of coordination and cooperation, animated by the tension between instrumental and identity self interest, to complement the well-established, transaction-based understanding of organizational governance. We then propose that the market-hierarchy continuum be re-thought as market, hierarchy, clan, organizational democracy array of organizational forms. The resulting taxonomy offers insight into the fit between organizational forms and underlying knowledge requirements as well as into the evolution of organizational forms in response to changing knowledge environments.

Keywords: Identity; organizational democracy; commons; open source; knowledge

Introduction

Globalization, the increased reliance on innovation, the widespread use of communication technologies, the increasing cost and complexity of invention (e.g., drug discovery), and the increasing importance to value creation of sophisticated technical knowledge (Mudambi, 2008) and collaboration (Garud, Karnoe, 2003), have spawned a bewildering array of new organizational forms, especially in knowledge-intensive industries. Many of these forms, including open innovation systems, research alliances, network organizations and open source communities, emphasize the relational elements

of governance such as social controls and trust, rather than the transactional elements prominent in market or hierarchical control (Dhanaraj, Parkhe, 2006, Gulati, Nohria, Zaheer, 2000, Laursen, Salter, 2006, Osborn, Hagedoorn, 1997, Poppo, Zenger, 2002). For example, more than 110,000 open source initiatives in fields as diverse as software and pharmaceuticals coordinate cooperative efforts primarily through community-generated and enforced social and professional norms, democratic decision-making processes and group-defined status markers (Lee, Cole, 2003, Strauss, 2010, von Krogh, von Hippel, 2006). These initiatives have much in common with established cooperatives whose governance systems look more like civic democracies than either markets or hierarchies (Forcadell, 2005, Whyte, 1999).[1] And indeed there have been calls in the business press for knowledge-intensive firms to shed bureaucratic organization in favor of coordination through political, quasi-democratic processes and project team structures (Hamel, Breen, 2007).

Established organization theory struggles to explain these cooperative innovations in organizational forms. Built on strong micro-foundational assumptions about motivation (self-interest seeking), rationality (bounded), the nature of the firm (nexus of transactions) and the role of different kinds of contracts (spot transactions, employment contracts, etc.) (Coase, 1937, Williamson, 1991, Williamson, 1993, Williamson, 1994), transaction cost economics has proven its usefulness for explaining why particular

[1] While unheralded and under-studied, cooperatives are a vibrant part of industries such as financial services (the $575 million Rabobank), retail (REI and Coop Nordic) and of course, agriculture (Dairy Farmers of America). In fact, in Europe, cooperatives employ more people than do large corporations. (Lotti R, Mensing P, Valenti D. 2006. Cooperative solution: This self-governing corporate structure protects communities and prospers in a globalizing world. *Booz Allen Hamilton Management Quarterly.* **47** (3): 2-13.)

organizational forms fit particular contexts (Geyskens, Steenkamp, Kumar, 2006). For all of its success, transaction cost economics has been challenged by the knowledge-based view for lack of attention to the ways in which firms foster social communities that generate, retain and coordinate value-creating knowledge (Kogut, Zander, 1992, Kogut, Zander, 1996, Nahapiet, Ghoshal, 1998, Nonaka*, et al.*, 2000). Indeed, Ostrom's extensive study of commons regimes underscores the central role of social communities and common identities in the governance of organizations (Ostrom, 1999, Ostrom, 2006). Others have highlighted the existence of network forms of organization that are neither market, hierarchy nor hybrid (Powell, 1990, Powell*, et al.*, 1996), suggesting that such network forms are more effective than hierarchy in fostering and leveraging the social communities that generate knowledge and more effective than markets in utilizing and coordinating tacit knowledge.

The challenge for organizations along the market-hierarchy continuum is precisely the generation and coordination of strategically valuable knowledge that is at once tacit and joint – at once tacit and embedded within the social fabric of networks of skilled individuals (Anand*, et al.*, 2007, Nahapiet, Ghoshal, 1998, Nonaka*, et al.*, 2000, Spender, 1996). When critical knowledge is both tacit and joint, managers – and organization theory – can no longer assume individual ownership of ideas and effort (Hart, Moore, 1990) or expect the accurate metering of individual contributions (Osterloh, Frey, 2000, Williamson, 1981). Further complicating matters, the generation and sharing of such tacit, joint knowledge seems to depend on intrinsic, non-pecuniary motivators that may sit uncomfortably with, and can be diminished by, the extrinsic motivators common to

both markets and hierarchies (Deci*, et al.*, 1999, Mudambi*, et al.*, 2007, Osterloh, Frey, 2000). Even the search for knowledge workers (Florida, 2005) is hindered by the difficulty of creating a market for knowledge because the value of new knowledge – especially tacit, joint knowledge – cannot be known until the purchaser has obtained the knowledge (Arrow, 1962). In short, as the transaction environment becomes more knowledge-intensive, managers find it increasingly difficult to determine how best to motivate and organize cooperation among members of creative teams who must work jointly to be successful (Poppo*, et al.*, 2008).

Our goal in this paper is to articulate a theory of governance that reflects both the demands of knowledge intensity and the constraints of human nature, thus illuminating the micro-foundations of organization (Felin, Foss, 2009). Our approach is to reflect critically on some of the core assumptions underlying theory and policy concerning the organization of knowledge-intensive firms (Morlacchi, Martin, 2009), especially in light of new forms of cooperative organization. Specifically, we turn to the economic sociology, evolutionary psychology and social identity literatures to build on and extend the insights of transaction cost economics by reexamining transaction cost – and indeed most organization theorists' – assumptions about self interest. We propose that humans are motivated as much by the longing to belong – the search for identity as part of a group – as by instrumental self interest. We also suggest that, when determining governance forms, coordination choices (authority v. competition) are complemented by cooperation choices (harnessing individuals v. leveraging groups). These insights allow us to argue that the market-hierarchy-clan continuum can be more productively

conceptualized as a two-by-two, cooperation/coordination matrix of market, hierarchy, clan and organizational democracy. We then show how these stylized governance forms are shaped by the interplay between coordination and cooperation choices; we also explore how the forms fit with underlying knowledge requirements. Our theoretical model provides for a more fine-grained taxonomy of organizational solutions to the cooperation and coordination challenges posed by knowledge intensity; explains the differential advantages of innovative organizational forms like open source communities and cooperatives; and suggests how the interplay between coordination and cooperation requirements of the transaction environment shapes the evolution of organizational forms.

The first section of this paper introduces the two-by-two governance forms matrix and its underlying coordination and cooperation continua, as well as the fit with knowledge requirements and assumptions about human nature. Section two expands on the proposed organizational democracy form of organization, describes various organizational democracy-market and organizational democracy-clan hybrids, and specifies the conditions under which each are likely to thrive. The third section extends the proposed taxonomy by tracing evolutionary paths between organizational forms. Finally, the paper concludes with a brief discussion of the theoretical, empirical and practical implications, extensions and limits of the market, hierarchy, clan, organizational democracy framework.

Coordination and Cooperation

Elaborating on the logic of transaction cost economics, we propose a matrix of four organizational forms – market, hierarchy, clan and organizational democracy – each of which generates efficiency advantages given certain transactional environments. Organization involves "concerted effort towards a common…goal" (Ouchi, 1980: 129) such that managers must solve two organizational problems: cooperation and coordination. Cooperation involves the will to work together towards a common goal; cooperation depends on effective motivation to pool effort. Coordination involves focusing and directing that effort; coordination depends on, among other things, the effective transfer of knowledge. Faced with various transactional requirements involving varying types of knowledge and varying intensity of joint effort, managers foster the organizational form that will best inspire cooperation and coordinate action to create value. Figure 2-1 illustrates the options as a 2x2 matrix of stylized organizational forms arrayed along orthogonal continua of managerial choices – from authoritative to competitive coordination and from cooperation based on harnessing individuals to cooperation based on leveraging identity groups.

Figure 2-1. Managers' Market, Hierarchy, Clan and Organizational Democracy Governance Options

		Cooperation Options	
		Harness Individuals	**Leverage Identity Groups**
Coordination Options	**Authority**	**Hierarchy**	**Clan**
	Competition	**Market**	**Organizational Democracy**

Whether these choices result in survival and superior performance depends, in part, on how well the chosen organizational form fits with the underlying knowledge requirements (Silverman, Nickerson, Freeman, 1997) – as depicted in Figure 2-2.

Figure 2-2. Fit Between Organizational Forms and Knowledge Requirements

	Divisible	**Joint**
Tacit	**Hierarchy**	**Clan**
Explicit	**Market**	**Organizational Democracy**

As summarized in Table 2-1[2], the market form of organization encourages cooperation by harnessing self-interest through market incentives and facilitates coordination through pricing, resulting in coordination through competition; pricing, and so the market form, is efficient when the knowledge required is explicit and divisible. The hierarchy form of organization encourages cooperation through roles and rewards designed to harness otherwise opportunistic individuals, while facilitating coordination by tapping rational-legal authority to direct or organize effort; the hierarchical form is efficient when the

[2] Williamson might suggest an additional column specifying the type of contract that governs each organizational form. (Williamson OE. 2002. The theory of the firm as governance structure: From choice to contract. *Journal of Economic Perspectives.* **16** (3): 171-195.) Building on his work that suggests neoclassical contract law for market and employment contracts grounded in forbearance for hierarchy, we would suggest tradition as embedded in common law for clan and constitutions, as governed by constitutional law, for organizational democracy. Along these lines, Demil & Lecocq argue that open licenses form the contractual basis for a new organizational form – the bazaar – which is quite similar to what we call the commons form of organizational democracy (Demil B, Lecocq X. 2006. Neither market nor hierarchy nor network: The emergence of bazaar governance. *Organization Studies.* **27** (10): 1447-1465.)

knowledge required is tacit but still divisible and so able to be measured and rewarded. The clan form of organization ensures cooperation by leveraging socialization to generate and maintain goal congruence and facilitates coordination through horizontal communication, enforced and directed by the traditional authority of elders; it is efficient when the required knowledge is both tacit and joint. The organizational democracy form of organization creates cooperation by leveraging partisanship and politics in a rule-bound power struggle resulting in negotiated goal congruence; it attains coordination through political give and take; and it is efficient when required knowledge is at once explicit and joint – as in a research alliance.

Table 2-1. Elements of Pure Organizational Forms

Form	**Knowledge Conditions**	**Coordinating Mechanism**	**Motivation Conditions**	**Cooperation Mechanism**
Market ***(atoms)***	Explicit & Divisible	Economic Competition *(invisible hand)*	Instrumental self-interest	Price *(aligns interest)*
Hierarchy ***(silos)***	Tacit & Divisible	Rational-legal Authority *(visible hand)*	Instrumental self-Interest	Roles & Rewards *(align interests)*
Clan ***(layers)***	Tacit & Joint	Traditional Authority *(elders)*	Identity self-Interest	Socialization *(imposes common interest)*
Organizational Democracy ***(factions)***	Explicit & Joint	Political Competition *(interest groups)*	Identity self-Interest	Checks & Balances *(negotiates common interest)*

Authority and Competition as Foundations for Coordination

Following transaction cost economics and theories of knowledge (Nonaka, 1994, Polanyi, 1967, Williamson, 1981, Williamson, 1991), we base the coordination dimension of our model on the assumption of bounded rationality: When the task environment of transactions requires tacit knowledge that is too opaque to outside observers for competitive markets to determine value, some authority is required to determine and apportion value. At the extreme in which the most critical knowledge is explicit, the parameters of transactions are readily observed by all and can be defined, codified and transmitted completely, quickly, easily and without confusion. Because the information required for successful transactions is both available and clear, transactions are amenable to competitive self-organization, control and resource allocation, whether through markets (Coase, 1937, Ouchi, 1979) or politics (Mudambi, Navarra, 2004).

At the extreme in which important knowledge is completely tacit, transactions are completely enmeshed in practice, essentially invisible to outsiders and only transmissible through direct contact with experienced colleagues. In particular, as knowledge becomes more tacit, asset specificity increases – especially the "human asset specificity that arises from learning by doing" (Williamson, 1981: 555) – information becomes more uncertain, performance measures less perfect, and it becomes ever more difficult to specify contracts and meter effort (David, Han, 2004, Nickerson, Zenger, 2008, Williamson, 1991). Under such conditions, coordination requires authority, to set priorities, define measures and allocate resources. In the hierarchical firm, employees trade the powerful incentives of the market for the security of an employment contract and a combination of formal and informal order. In turn, firms gain the right to dictate cooperation and

coordination, including the sharing of knowledge, as a condition of employment (Williamson, 1991, Williamson, 1994). Similarly, in the clan setting, while much coordination is horizontal, the authority of tradition, in the person of elders steeped in both clan values and work processes, is always present to mediate disputes and enforce order (Aoki, 1986, Ouchi, 1980).

Clans and Cooperation

Our first proposition is that *governance possibilities are defined by interacting and complementary cooperation and coordination continua, with the cooperation continuum stretching from the harnessing of individuals to the leveraging of identity groups and the coordination continuum stretching from reliance on authority to reliance on competition.*

There is a growing body of evidence that market and hierarchy governance is sometimes substituted for and sometimes complemented by relational arrangements (Woolthius, Hillebrand, Nooteboom, 2005). By relational governance, we mean "a social institution that governs and guides exchange partners on the basis of cooperative norms and collaborative activities" (Poppo*, et al.*, 2008: 1197). Even transaction cost economics scholars note that formal contractual and structural governance arrangements are often augmented by informal social and organizational relationships, especially trust (Williamson, 1994). Other economists point to the critical role of psychological contracts based on ongoing emotional ties and reciprocal good faith (Akerlof, 1982) and to the role of relational contracts more generally in the management of markets, firms and non-standard forms such as networks (Baker*, et al.*, 2002). And studies of network evolution suggest that alliances that make seemingly inefficient investments in relationship building

are more durable and effective than those that organize in a more efficient, business-like way (Human, Provan, 2000).

Of these relational elements, trust plays a particularly prominent role. Trust emerges when expectations of continuity combine with repeated interactions to support expectations for behavior, standards of fairness (or at least predictability) and social norms (Abell, 1991, MacKenzie, 2008, Poppo*, et al.*, 2008, Zaheer, McEvily, Perrone, 1998). Trust develops as individuals work together daily, create shared knowledge, blend cultures and gain confidence that their partners will eschew opportunistic behavior (Carson, Madhok, Wu, 2006, Das, Teng, 1998, Ring, Van de Ven, 1994). Once established, trust functions as a "remarkably effective lubricant to economic exchange … [that] reduces complex realities far more quickly and economically than prediction, authority or bargaining" (Powell, 1990: 305). By reducing the need for extensive monitoring and by reducing conflict, trust can reduce transaction costs (Dyer, Chu, 2003, Zaheer*, et al.*, 1998) and make less costly governance choices viable (Gulati, Nickerson, 2008). Thus, trust and relational norms of fairness often complement, or perhaps even substitute for, contracts and formal organizational structures, especially in situations in which exchange partners work together repeatedly, in which information about reputation spreads quickly, and in which repeated exchanges encourage shared identity (Argyres, Bercovitz, Mayer, 2007, Barden, Mitchell, 2007, Luo, 2005, Mayer, Argyres, 2004, Poppo, Zenger, 2002, Starkey, Barnatt, Tempest, 2000). In short, the relational elements of governance play an important role in determining the most efficient form of governance for a given situation.

While the transaction cost and trust literatures often place the relational governance of cooperation secondary to, or at best complementary to, transactional governance, Ouchi's notion of clan recognizes that in some situations, especially when uncertainty reigns, the relational elements of governance can be primary (Ouchi, 1980, Ouchi, Price, 1978). Thus, rather than through the harnessing of individual interests, clan organization achieves cooperation through socialization legitimized by tradition (Alvesson, Lindkvist, 1993, Das, 1989). Socialization into one identity group not only ensures cooperation through goal congruence, but enables horizontal coordination within each strata of the organization (Aoki, 1990, Ouchi, 1980).[3] That is, socialization into the clan creates both common goals and a status hierarchy in which elders hold the authority to enforce coordination and settle disputes.

Clan-style governance gains an efficiency advantage when two conditions obtain (Mahnke, Venzin, Zahra, 2007, Osterloh, Frey, 2000, Ouchi, 1980). First, clan governance thrives when the most important knowledge is so tacit *and* joint that the metering of effort, assignment of value and communication of knowledge become too expensive even for a hierarchy. Second, clan governance becomes possible when goal congruence through socialization dramatically reduces opportunism; that is, clan governance works to ensure cooperation when collective identity trumps individual identity and group interest trumps individuals' instrumental self interest.

[3] "In a bureaucracy, legitimate authority will commonly take the "rational/legal" form, whereas in a clan it may take the "traditional" form." (Ouchi, 1980: 138).

Human Nature as We Know It: Theories of Individual and Group Identity

At the most fundamental level, the notion of clan identity challenges organization theory's working assumptions about motivation and rationality. Whereas the market and hierarchy assumption is that cooperation is achieved through aligning the interests of opportunistic individuals, the clan assumption is that cooperation is achieved through socialization into an identity group; clan governance depends on creating a common interest rather than harnessing multiple interests. Similarly, while hierarchy and market assume more or less bounded rationality, the notion of a clan assumes the possibility of a group-constrained rationality, or at least a common cognitive map of what is important and real (Garud, Rappa, 1994, Kuhn, 1970). While foreign to mainstream economics and organization theory, the possibility of group identity and group think is a key part of a number of more sociological theories. To simplify, we suggest in Table 2-2 a social science continuum of assumptions about rationality and motivation.

Table 2-2. The Autonomous-Collective Continuum of Human Experience

	Classical Economics "Homo economicus" **(Smith, 1789)**	***Transaction Cost Economics*** **(Williamson, 1981)**	***Economic Sociology*** **(Granovetter, 1985)**	***Normative Sociology "Homo sociologicus"*** **(Durkheim, 1938)**
Social Structure	Autonomous Individuals	Partially Autonomous Individuals	Embedded Individuals	Fully Embedded Individuals
Cognition	Rationality	Bounded Rationality	Structured Rationality	Hegemonic Rationality (Groupthink)
Motivation	Instrumental Self Interest	Instrumental Self Interest	Identity Self Interest	Identity Self Interest

At the *homo economicus* extreme, the working assumption is that human actors are fully rational, atomized individuals whose instrumental, calculating pursuit of self-interest

must be harnessed and coordinated if they are to work together (Smith, 1789). Recalling Knight's admonition to pay more attention to "human nature as we know it" (Williamson, 1981: 549), transaction cost economics modifies the *homo economicus* extreme by recognizing the boundedness of rationality and the dangers of opportunism. Bounded rationality prevents the writing of complete contracts and so necessitates some sort of ongoing controls (prices, procedures, feedback loops) to facilitate adaptation to unforeseen changes (March, Simon, 1958). Opportunism – "self-interest seeking with guile" – at once enhances motivation and complicates coordination and control (Williamson, 1981: 554, Williamson, 1993, Williamson, 2002). Given the motivational power of instrumental self-interest and the bounded rationality limits on contracting, formal organization in the form of market, hybrid or hierarchy is required to harness individual and to govern transactions (Williamson, 1991).

At the *homo sociologicus* extreme, human actors are seen as so interdependent that social structure dictates individual behavior, perception, cognition and motivation. As a result, individuals follow prevailing social norms more or less blindly and with little regard for individual self-interest (Ng, Tseng, 2008, Weale, 1992). Accordingly, collective identity coordinates and harmonizes individual actions by replacing individual goals and perceptions with collective goals and perceptions (Durkheim, 1938, Ouchi, 1980). Just as transaction cost economics modifies the *homo economicus* extreme, so does the embeddedness perspective modify the *homo sociologicus* extreme. The embeddedness view is that individuals are embedded in and shaped by concrete, ongoing systems of social relationships *without* being completely controlled by those relationships and the accompanying norms and roles (Granovetter, 1985). "…Individual behavior is always

mediated by social relations [that] are as much a part of the description of reality as is individual behavior" (Arrow, 1994: 5).

Taken together, this continuum of theory suggests to us that scholars working in various traditions are simply emphasizing different aspects of human nature, and so that we are at once economic and social creatures. Human actors are *both* autonomous beings who maximize self-interest through independent, rational action *and* embedded social beings whose perception and pursuit of self interest are shaped by the groups to which they belong (Loch*, et al.*, 2006, Ng, Tseng, 2008). Depending on the context (the labile behavior of adolescents comes readily to mind), human cognition can be marvelously autonomous and calculative or nearly robotically programmed by groupthink; depending on the situation, human behavior can be dramatically opportunistic or emphatically conformist; in all situations, we would argue, human behavior reflects the tension between individual- and group-directed goal-seeking.

Motivation: Instrumental and Identity Self-Interest

Our second proposition is that *human actors are as motivated by identity self interest as by instrumental self interest.*

Assuming that humans experience the world at once as individual and as members of groups, we propose that instrumental self interest ("what's in it for me?") is complemented by an existential, identity-driven self interest ("who am I in relation to those around me?"). That is, while instrumental, opportunistic self-interest remains a

powerful and ubiquitous motivator of individual behavior, it is augmented by an equally powerful motivation to associate with and support the group with which one identifies (Akerlof, Kranton, 2005, Loch*, et al.*, 2006, Widegren, 1997). Phenomenologically, we experience this duality as a "basic dichotomy between self-interest and the longing to belong" (Kogut, Zander, 1996: 502), and we observe the "longing to belong" in the extraordinary intensity with which humans strive to achieve acceptance by the group (Shapiro, 2005, Wrong, 1961).

Empirically, there is a wealth of literature from economics, political science, psychology and sociology that suggests that in any given population at any given time, some actors act in completely self-regarding ways while others demonstrate strong reciprocity (the tendency to cooperate with others, and to enforce cooperation, even at significant personal cost) (Fehr, Gintis, 2007). Choi & Bowles (2007) even argue that an extreme form of parochialism – marked by the willingness to die for one's group – may have co-evolved along with more opportunistic self-interest to drive the emergence of cooperative social structures. Indeed, evolutionary psychologists suggest that human cognitive architecture is more suited to managing social exchanges within coalitions than it is to managing the rational calculations assumed in models of autonomous individuals (Cosmides, Tooby, 1994). Similarly, surveys of evolutionary biologists' work on brain size suggest that the large size of human (and primate) brains is the result of the demands for processing social interconnections, especially the preservation of social coherence in intensely bonded groups, not calculation (Dunbar, 2003, Dunbar, Schultz, 2007). Further, Tooby et al (2006) report on experiments that suggest that because cooperation is

often necessary to meet basic needs, human minds have evolved to value the existence of the group for its own sake; to notice and punish free riding; and to reward those who cooperate in maintaining the identity and integrity of the group. Other experiments show that humans exhibit strongly negative emotional reactions to free-riding – and will punish free riding even at personal cost (and with no prospect of personal gain) (Fehr, Gachter, 2002). More positively, econometric studies suggest that increased well-being is associated with increased participation in social governance – whether through direct democracy or federal structures (Frey, Stutzer, 2000).

At a higher level of abstraction, social identity theorists suggest a mechanism that links individual search for identity with the longing to belong to one's group. They describe the search for identity as the search for self-esteem enhancement and uncertainty reduction through "trying on" self-defined prototypes until finding one that brings self-perception and behavior in line with salient group exemplars (Bartel, 2001, Hogg, Terry, 2000). In turn, the group exemplars that constrain and guide individual search are rooted in shared cognitions developed iteratively and interactively through the ongoing collection of individual searches.

The search for, and development of, a collective identity is evident in the phenomenon of informal organization. Collective work creates common experiences and collective narratives that drive the evolution of shared meaning, identity and social norms among organization members (Boje, 1991, Boje, 1995, Hardy*, et al.*, 2005). Over time, co-workers develop a powerful sense of bounded collective identity and belongingness that

promotes solidarity – experienced as warmth, intimacy, emotional support, psychological commitment, trust, shared norms and expectations for mutual assistance (Harrison*, et al.*, 2002, Ring, Van de Ven, 1994, Widegren, 1997). In turn, this identity and belongingness facilitates the back-and-forth flow of resources, learning, horizontal coordination and the development of social capital (Hardy*, et al.*, 2005, Oh*, et al.*, 2004). Or as Gächter & Fehr (1999: 362) conclude from their experimental studies of collective action, "… group identity is like a 'lubricant' that makes social exchange effective."

Pragmatically, group identification and a sense of belonging leads to more job-related cooperation among organizational members (Aguilera*, et al.*, 2007, De Cremer, Blader, 2006). Further, potential collaborators from different organizations can, through the negotiation of relationships and interests and the sharing of common experience and stories, generate trans-organizational identities that enable effective learning and collaboration in the space between formal organizations (Hardy*, et al.*, 2005, Jones*, et al.*, 1997, Oh*, et al.*, 2004, Ring, Van de Ven, 1994, Tsai, Ghoshal, 1998). In turn, these trans-organizational identities knit together the networks, alliances and dispersed communities of practice that are increasingly common and important fixtures on the organizational landscape (Brown, Duguid, 1991, Brown, Duguid, 2001, Kodama, 2005, Powell*, et al.*, 1996). The organizational challenge is to manage these social communities even as the very same social identities threaten to devolve into narrower, parochial divisions that diminish the development of common goals, shared cognitions and correspondingly, the creation and transfer of knowledge (Willem, Scarbrough, Buelens, 2008).

In short, managers seeking to motivate cooperation must attend to a continuum of motivations from opportunistic, instrumental self-interest to longing-to-belong identity self-interest. At the instrumental extreme, independent individuals are motivated solely by extrinsic, pecuniary motivators, with only instrumental regard for the interests of others. At this extreme, individuals' goals often diverge, not only from those of others, but also from those of the organization. Such divergence generates variety, but makes it difficult to engage in concerted action. Thus, the challenge at this extreme is to align interests – through market incentives or hierarchical fiat – well enough to enable the cooperative creation of economic value.

At the identity extreme, individuals identify with a larger collectivity and individual goals are conditioned by group goals. Such identity-influenced goal congruence supports concerted action, but at the risk of groups becoming sclerotic, parochial and resistant to external inputs. Worse, at this extreme, groups may well fracture into partisan sub-groups, each committed to advancing its own agenda. The challenge at this extreme is thus to align group identities – through clan socialization or political negotiation – sufficiently to support the cooperative creation of economic value.

Ouchi observed that the clan structure is the "obverse of the market relation since it achieves efficiency under the opposite conditions: high performance ambiguity and low opportunism" (Ouchi, 1980: 135). Ouchi's observation is consistent with our argument that the dimensions are complementary, even orthogonal, and raises the question of what

form exists diagonally opposite hierarchy. This form would achieve relative efficiency when there is low performance ambiguity *and* low *individual* opportunism. In our model, we suggest that this form is the organizational democracy form, and that it thrives when critical knowledge is explicit, even if joint, and because, at least within partisan identity groups, there is high goal congruence and low opportunism.

Figure 2-3. Organizational Forms and Assumptions about Human Nature

		Motivation	
		Self-interest	**Identity**
Rationality	**More bounded**	**Hierarchy**	**Clan**
	Less bounded	**Market**	**Organizational Democracy**

The Organizational Democracy Form of Organization

Our third proposition is that *the "organizational democracy" form is a recognizable form of organization – such as open source systems as well as certain cooperatives and open innovation initiatives – that creates economic value by effectively inspiring cooperation among and coordinating the efforts of identity groups.*

> *When the stone is too large or the production facility too complex for a single person, what is called for is cooperation, ... [G]rain farmers who need a large grain elevator do not form corporations which take over farms and make farmers into employees; instead, they form a cooperative to own and operate the elevator." (Ouchi, 1980: 48)*

Ouchi's farmer cooperative recalls the colloquial understanding of democracy as a participatory, self-guiding system of independent, equal, strong-willed actors animated by common interests and a commitment to continue to work together despite disagreements

(Borgen, 2004, Ouchi, 1980). That is, "democracy means that members of an organization or society participate in processes of organizing and governance" (Harrison, Freeman, 2004: 49). And in organizational settings, "the essential difference between a democratic and an authoritarian system is not whether executive officers order or consult with those below them but whether the power to legislate on policy is vested in the membership…." (Katz, Kahn, 1978: 58).

By using the term "organizational democracy," we mean to emphasize the central role of politics in the sense of "mobilizing material and symbolic resources to influence authoritative decision making in accord with … perceived interests and values, some of which necessarily conflict with the perceived interests and values of other individuals, groups and organizations" (Stryker, 2000: 179). With this term, however, we also want to capture the distinction between constitutional politics and ordinary politics (Mudambi, Navarra, Sobbrio, 2001) and to emphasize that such political machinations are contained within self-defined rules of the game, usually codified into some sort of constitution or agreement: "Constitutive rules, for example, of property ownership, majority vote, legal rule, professional expertise…define the source of authority and govern the distribution and aggregation of key influence-relevant resources." (Stryker, 2000: 180, see also, Weber, 1978). Finally, in our framework, organizational democracy is a partisan affair in the sense that members self-organize into identity groups that vie with each other for organizational dominance.

In our model, then, organizational democracy as a competitive, self-managed method of coordinating repeated exchanges and encouraging cooperation in a political setting. Like

markets, organizational democracy is self-organizing through competition. Unlike markets, organizational democracy relies on political competition rather than economic competition for coordination. Like clans, democracy leverages identification with a group to develop goal congruence. Unlike clans, democracy does not rely on elders and tradition to mediate conflicting claims; rather, democracy draws authority from the polity and relies on legislated rules and processes to resolve conflicting claims.

As in civic democracies, organizational democracies exhibit enfranchisement (one-member, one-vote); separation of powers between direction (management) and control (membership); representation with public debate (open exchange of information and struggle towards agreement); and constitutions or other formal, self-defined contractual rules for allocating decision authority (Gomez, Korine, 2005, Masten, 2006). Enfranchisement enshrines the notions that membership in a bounded group grants participation in governance and that those charged with governing are accountable to the membership (Clegg, Kornberger, Carter, 2003, Kerr, 2004). The separation of powers recognizes that the right to govern requires the consent of the governed. It also reserves critical strategic and procedural decisions for the membership while delegating day-to-day decision-making and execution to an administrative function (Courpasson, Dany, 2003, Masten, 2006). In organizational settings, the idea of representation with public debate translates as the development and maintenance of a context that encourages the active, political participation of identity groups. This context includes open information flows, participatory organizational structures involving multiple stakeholders, protections for dissident voices and a culture of involvement (Gomez, Korine, 2005, Kerr, 2004,

Rousseau, Rivero, 2003). Finally, organizational democracy relies on some kind of constitution that enhances the legitimacy of management by ensuring procedural fairness while also facilitating the collective enforcement of political arrangements, including the transfer of power, between identity groups (Gomez, Korine, 2005, Masten, 2006).

Examples of Organizational Democracy

Pragmatically, common components of effective organizational democracies such as cooperatives and mutual associations include equity ownership for members, controls on outside investment, open book management, various procedural and structural checks and balances, independent dispute resolution and active maintenance of a democratic culture (Cornforth, 2004). At the level of a single business unit, one example is the Sociedad Cooperativa de Trabjadores Pascual, a fruit soda maker in Mexico with a workforce of approximately 4000 (Hernandez, 2006). Bylaws, policy and membership decisions are made through a representative general assembly elected by members; information, including financial detail, is openly shared; there are checks and balances built into the structure; and the culture is strongly democratic. These arrangements are animated – and sometimes strained – by constant political struggle between factions as various leadership groups claim power only to be reined in by the larger membership. More insidiously, the cooperative's culture and arrangements are undermined by the evolution (driven, in part, by competition with other firms) of a cadre of professionals who share tacit management and technical knowledge that is difficult to communicate to the rank-and-file worker members – although members make heroic efforts to communicate, including 4-10 hour

meetings dedicated to understanding the implication of technical decisions (Hernandez, 2006: 122-123).

At the level of the corporation with the equivalent of multiple business units, an example is the Seikatsu Club Seikyo, a $150 million Japanese consumer-owned cooperative that provides a wide array of goods and services to its 47,000 household members (Maruyama, 1991, Oka, 2000). Started after World War II by housewives frustrated by the lack of method for delivering fresh milk to cities, Seikatsu has established a long record of business model innovations ranging from buying clubs to distribution cooperatives, production cooperatives, service cooperatives such as nursing homes and even local political parties. Seikatsu is organized on the basis of 10-family *hans* that serve as an identity group, a structural reinforcement for the transmission of culture and a practical vehicle for governance and distribution. On top of its collective *han* social structure, increasingly elaborate and explicit political processes for the governance of the larger entities (eg., the distribution cooperatives) and system. Finally, despite its growth, Seikatsu has remained largely a women's organization committed to the community optimum, mutual aid and democratic participation.

Similarly, the large and inventive W.L. Gore & Associates (of GORE-TEX fame) has organized its 86,000 associates (never employees) into a lattice of peer groups dedicated to technological and business innovation (Hamel, Breen, 2007). W.L. Gore features remarkably participatory democratic procedures in which everyone from team leaders to the CEO are chosen – and fired – by the teams they lead. This direct democracy is

facilitated by worker ownership; strong information flows, both through dense networks of social ties and formalized reporting systems; the physical clustering of employees (in groups of 200 or less) and plants; the expectation that innovations come from freely organized teams; and a consciously maintained "deep sense of shared destiny" (Hamel, Breen, 2007: 93).

When Organizational Democracy is Efficient…and Inefficient

Our fourth proposition is that *organizational democracy organization will be more efficient than other organizational forms when strategically critical transactions require explicit but joint knowledge.*

We expect organizational democracy to exhibit both market-like and clan-like advantages and disadvantages. Like the market, organizational democracy realizes the advantages of variety generation by drawing on multiple perspectives to generate innovative ideas. Under organizational democracy, however, selection is accomplished through political competition and negotiation rather than pure economic competition. Further, as with markets, organizational democracy relies on the flow of explicit knowledge featuring unambiguous information and measures; this limits its usefulness in situations in which tacitness and ambiguity reign. When essential knowledge is largely tacit, when interpersonal communications must be translated across cultural and linguistic boundaries, or when prices and procedures cannot be well-specified, both organizational democracies and markets become unwieldy.

Like clans, organizational democracy exhibits the advantages of participatory systems that support adaptation and implementation in response to moderate rates of environmental change (Lotti*, et al.*, 2006). At the same time, organizational democracies, like clans, suffer from the high costs of creating and maintaining highly participatory systems and cultures – costs that tend to grow rapidly with scale and/or social or cultural complexity. These costs are evident in the ponderous, legislative decision-making (10-hour meetings!) that organizational democracies exhibit when factions contest every decision, unconstrained by tradition or elders (Harrison*, et al.*, 2002, Harrison, Freeman, 2004). Further, formalized political processes can undercut strategic leadership, result in incoherent policies, be captured by factions within the membership, and conflict with institutional and political norms (Masten, 2006, Nunez-Nickel, Moyano-Fuentes, 2004). Finally, the embrace of competition between identity groups implies both cost to manage the competition and the possibility that the competition will devolve into value-destroying factional infighting.

In short, organizational democracy is most efficient for governing teams of actors bound by a common identity and willing to cooperate and compete to produce outputs that can be coordinated effectively at arms length. When conditions are optimal, organizational democracies generate a dialectical process of variety-generation and consolidation, leading to layers of adaptation and reinvention as factions negotiate creative responses to changing situations, without jeopardizing the underlying framework of agreement. But organizational democracy will falter when infighting and polarization overwhelm the

organization's adaptability or when task tacitness and complexity undermine the possibility of discussion and negotiation.

The Hybrid Nature of Organizational Forms

The stylized market, hierarchy, clan, organizational democracy forms are deceptively clear-cut. Just as human actors are at once autonomous and embedded in groups, so does every task environment contain a mixture of explicit and tacit, divisible and joint, knowledge; every population (and every individual), a mixture of motivations and constraints on rationality; and every organization, a combination of elements of each of the pure forms (Ouchi, 1979). For example, the Dutch Breman Group is a 25-firm, 1200-employee, $140 million family- and worker-owned group of hierarchical engineering firms knit together by a complex, interactive and participatory combination of management teams, democratic worker councils (that appoint management) and policy-setting bodies (De Jong, van Witteloostuijn, 2004). Similarly, the worker-owned Mondragon Corporacion Cooperativa (MCC) is a fifty-year-old, multinational, €9-billion group of high-technology manufacturing (e.g., robotics), distribution, retail and banking cooperatives that is governed at both firm and system levels by participatory and representative elected bodies (Forcadell, 2005) but that also relies on both hierarchy and clan elements to manage firm-level tasks (Forcadell, 2005, Morrison, 1991, Whyte, 1999). Finally, as knowledge creation has become increasingly important and complex, multinational corporations have begun to exhibit a greater degree of organizational diversity, featuring, for example, competence-creating hierarchical subsidiaries that

interact across internal markets (Cantwell, Mudambi, 2005) and are staffed by scientists embedded in trans-organizational, clannish professional guilds (Mudambi, Swift, 2009).

Intermediate Organizational Forms

Given the messiness of reality, one test of the face validity of the proposed model is its ability to provide a coherent framework for some of the newer organizational forms that are emerging in knowledge-intensive settings, especially the relatively undifferentiated network and alliance forms (Grandori, Kogut, 2002, Inkpen, Tsang, 2005). The following section describes several intermediate forms at two levels of analysis: organizations of individuals (e.g., business units) and organizations of business units (e.g., corporations); it also includes propositions for hybrids, at both levels, of the organizational democracy form.

Hybrids: Between hierarchy and market. Between market and hierarchy are the franchises, joint ventures and conventional supply chains described so well by Williamson and many others (Hennart, 1988, Williamson, 1991). Such hybrids combine explicit contracting and pricing mechanisms with the monitoring, command and control of hierarchy to harness the effort of autonomous, opportunistic participants. They show an efficiency advantage in situations in which knowledge generation can be relatively easily attributed to individuals and in which performance depends on the effective coordination the translation between explicit and tacit knowledge.

Production Networks: Between hierarchy and clan. Combining characteristics of hierarchy and clan are production networks that merge the authority of formal and

traditional hierarchies and leverage both opportunism and the longing to belong to manage the development and exchange of tacit knowledge. That is, these hybrids tap both instrumental and identity self-interest to knit together the network of producers and draw on both rational-legal and traditional (elder) authority to assign value and mediate disputes. While formal contracts, interlocking directorates, roles, policies and procedures are common enough, psychological contracts involving loyalty and emotional attachment, occupational socialization (eg., adherence to certain professional ethics and approaches to problems), and relational trust, borne of years of interaction, are equally important.

At the organizations-of-individuals level are project-oriented combinations of individuals or small teams drawn from a stable, evolving social network of specialists – for example, general contractors with their specialty subcontractors (Powell, 1990). Thus, in the creative world of movie and television production, teams of independent contractors with long histories of cooperation are convened as needed by brokers and coordinated through common goals, occupational norms and, for the duration of the project, hierarchical administrative structures (Christopherson, Storner, 1989, Miller, Shamsie, 1996, Starkey*, et al.*, 2000). More formally, multilateral production networks of small firms often coalesce around a designated broker/administrator that takes the lead in selling, planning, network administration, and the maintenance of the social ties that lubricate the network (Human, Provan, 2000).

At the organizations-of-business-units level, the iconic Toyota Production System manages a relatively small number of suppliers through long-term relationships, collaborative problem solving, joint pricing, input and output controls, regular socializing and strong social controls – all augmented by detailed contracts, aggressive negotiation and exhaustive training (Carson*, et al.*, 2006, Dyer, Nobeoka, 2000, Kogut, 2000). Similarly, in many research alliances, corporate researchers developing a new drug are guided more by common goals and professional standards than by hierarchical or market structures (Gereffi, Humphrey, Sturgeon, 2005, Powell*, et al.*, 1996, Walker, Kogut, Shan, 1997).

At both levels, hierarchy-clan hybrids show an efficiency advantage in situations in which performance depends on the effective coordination of tacit knowledge that can sometimes be attributed to individuals but is often jointly created.

Trading Networks: Between markets and organizational democracies. Combining the characteristics of markets and organizational democracies are trade associations and standard-setting organizations. Such networks leverage long-term relationships among exchange partners to manage the development and exchange of explicit, codified knowledge through a combination of political processes and economic competition.

At the organizations-of-individuals level are regional and national trade associations of small firms and independent contractors organized to facilitate market exchanges but administered in a more-or-less democratic way. To take but one example, the National

Association of Realtors in the United States provides a democratically controlled umbrella under which competing and cooperating realtors may interact for educational, political and business purposes (Ayal, 1986).

At the organizations-of-business-units level, standard-setting organizations leverage collective identity to blunt naked opportunism while codifying knowledge to ensure transparency (Terlaak, 2007). While the details vary, each standard-setting organization relies on explicit processes such as rules about membership eligibility, deliberation and decision-making to manage competition and find common ground between interest groups (Krechmer, 2006).

Such structures work for certain trade networks of firms as well. For instance, E. LeClerc is an innovative federation of independent, discount retail stores that combines market elements with a democratic cooperative structure (Lotti*, et al.*, 2006, Markides, 1998). LeClerc member/investor/store-owners make formal decision using elaborate voting procedures. The federation encourages rough equity among members by limiting ownership to two stores, and encourages investment in the network by allowing members to take minority ownership positions in other stores. Further, new stores are invariably started, owned and operated by employees trained by owners, thus tapping market/ownership appeals to instrumental self-interest while supporting the evolution of both faction identities (around certain original owners) and a strong federation identity and culture. Finally, successful storeowners who have reached the agreed-to limits of investment are charged with identifying and spreading best practices – and, not

incidentally, culture and a perception of fairness – throughout the system. The result is an inventive, adaptive, self-organizing and self-perpetuating network animated by both opportunistic self interest and the longing to belong.

This leads to our fifth proposition, that *market-organizational democracy hybrids show an efficiency advantage in situations and in which performance depends on the effective coordination of explicit knowledge that can sometimes be attributed to individual units but is often jointly created.*

Commons: Between clan and organizational democracy. Situated between clans and organizational democracies are open source communities of various descriptions. Commons coordinate activity elaborate political systems, while leveraging the longing to belong, in the form of intense socialization, to generate cooperation. Under commons regimes, the allocation of private use of a public resource is the prerogative and responsibility of membership group (whether villagers or programmers), often represented by small groups (the original juries) (Ostrom, 1999). Effective commons regimes prevent opportunistic use and destruction of common-pool resources by developing and enforcing endogenous rules, norms, processes and structures that recognize and reinforce mutual dependence (Neeson, 1993). Despite the difficulty of excluding any member-user, commons can be well-managed if and when socially bounded groups of users develop a common identity and actively develop and enforce their own rules of use and governance (Ostrom, 1999, Ostrom, 2006). Thus, in the mining district of Cornwall in the early 1800s, a combination of democratic collaboration among owners dedicated to the improvement of district-wide efficiency and clannish

professional cooperation among engineers dedicated to advancing their individual and guild know-how led to the rapid development of the Cornish steam pump (Nuvolari, 2004).

For example, at the level of organizations of individuals are the vital, creative, sometimes contentious open-source communities such as Linux. In open-source communities, participants co-design and co-create complex technologies more quickly and reliably than do their hierarchically organized competitors (von Krogh, von Hippel, 2006). Open-source systems rely on both explicit knowledge (software code) and joint and often tacit problem solving processes based on vigorous, open discussion (O'Mahony, Ferraro, 2007, von Krogh, von Hippel, 2006). While participants can and do take sides in arguments, the development of factions is secondary to the commitment to preserve the system. Finally, to help ensure continuity, there is considerable effort devoted to evolving social norms of behavior into increasingly explicit constitution-like rules, roles, policies and procedures (O'Mahony, 2003).

Open source communities also rely on non-pecuniary incentives. While there are certainly some mild individual economic incentives such as the chance to demonstrate skill to employers or potential clients, much more powerful seem to be internalized, social-identity-driven rewards like belonging and recognition from valued peers, as well as the purely intrinsic motivations such as the pleasure of solving problems (Roberts, Hann, Slaughter, 2006, Sawhney, Prandelli, 2000). Further, to use the open-source commons, one must join the social group and abide by its rules. Selection is carefully

managed through strict requirements concerning commitment to the project and technical skill as certified by recommendations from existing members. Once admitted to the community, members are subject to rigorous scrutiny and an open process of criticism and discussion, backed by social pressure to act within norms of behavior, etiquette and performance (Lee, Cole, 2003, O'Mahony, 2003).

At the organization-of-units level is Alcoholics Anonymous with its iconoclastic treatment method. AA is organized into tens of thousands of clan-like chapters, each knit together by a web of stories that generate and reinforce identity, and each governed by a status hierarchy of sponsors and newcomers (Kitchell, Hannan, Kempton, 2000, Lovaglia, 2000). At the systems level, the chapters are organized into districts, regions, etc and elect representatives to a legislative "conference" designed to keep AA non-hierarchical and decentralized while preventing disintegration (Borkman, 2006).

In short, commons-type hybrids are animated by identity self interest and thrive when there are efficiency advantages to be obtained by combining authority-based and competitive coordination of a mixture of tacit and explicit knowledge.

This leads to our sixth proposition, that *market-organizational democracy hybrids show an efficiency advantage in situations and in which performance depends on the effective coordination of jointly created explicit and tacit knowledge.*

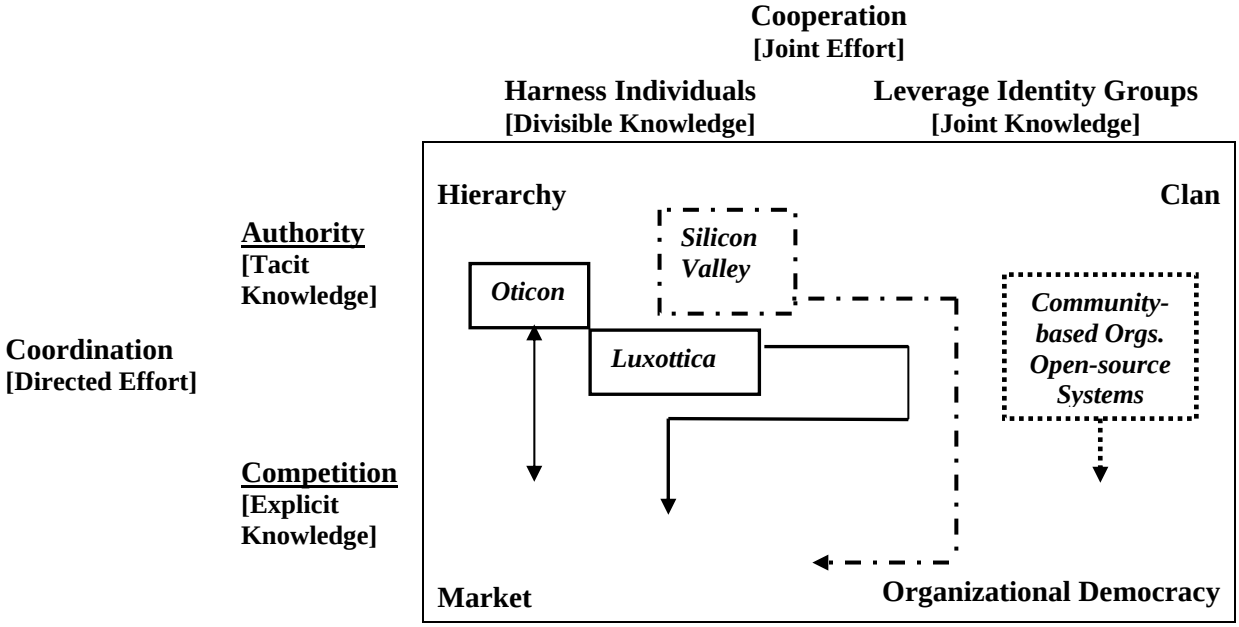
The Evolution of Organizational Forms

An additional test of the face validity of the proposed framework is whether it is useful in tracing the evolution of organizational forms. The model's continua suggest underlying dynamics that push and pull existing forms in response to changing conditions. For example, as business processes have become more standardized, information technology more powerful and products more modular, outsourcing has accelerated, moving more activities outside of the hierarchy and into the market (Gereffi*, et al.*, 2005). Similarly, firms like GlaxoSmithKline have begun to leverage the collective identity of research scientists by breaking up hierarchical research organizations into more clan-like, cross-subsidiary, cross-disciplinary "centers of excellence" that even reach beyond the firm boundaries into research alliances with scientists in academia and smaller firms (Garnier, 2008). Further, case studies of identity-driven, community-based enterprises suggest that they evolve towards democratic structures as the task environment becomes formalized and operating knowledge more explicit (Peredo, Chrisman, 2006). Indeed, it remains an open question whether open source systems will evolve toward democracy or drift towards the market as they expand beyond their charisma-dominated founding clans (O'Mahony, Ferraro, 2007, Oh, Jeon, 2007).

Figure 2-4 maps several sample evolutionary pathways. First, at the level of organizations of individuals is Oticon experiment. At the end of the 1980s, in a radical attempt to leverage the high-powered incentives and the creative churn of the market, Oticon slashed its hierarchy to only two levels and reorganized as a shifting market of project teams (Foss, 2003). The teams were formed as needed around project proposals with neither management guidance nor an established democratic process; individuals' pay

was linked directly the success of their projects; and the entire system was supported by a state-of-the art information system designed to codify information exchange. Initially, product-development times dropped, languishing projects accelerated and performance improved. But over time, Oticon drifted back toward hierarchy, in part because management used veto and agenda-setting power to undercut market incentives and in part because the market-based reward system was unable to support the horizontal coordination and development of tacit knowledge critical to the support and evolution of complex technologies. Indeed, as predicted by Osterloh & Frey (2000), the Oticon market system seems to have crowded out the intrinsic motivation and social identity required for the joint development of knowledge.. While improved performance measurement might have helped to salvage the Oticon experiment, our framework suggests that, to the extent that horizontal communication was critical, Oticon would have done better to reorganize in clannish directions by strengthening collective, perhaps professional, identity.

Figure 2-4. Examples of the Evolution of Organizational Forms



At the level of organizations of business units, consider the path taken by Luxottica, one of the largest manufacturers of eyeglass frames in the world (Camuffo, 2003). Initially launched as a conventional hierarchy run by a charismatic entrepreneur, Luxottica tried to emulate the success of the industrial district in the neighboring Cadore Valley by spinning off firms to seed a production network of small firms centered around Luxottica. This system performed well initially and led to increased levels of joint tacit knowledge within the Luxottica system. But when performance was threatened by the entrance of low-cost, standardized products from Asia, Luxottica reabsorbed many of its former spin-offs into a conventional hierarchy. It then standardized roles, processes and routines and until it was able to outsource various functions to fewer, larger firms orchestrated as a typical hybrid supply chain.

Finally, the much heralded history of Silicon Valley illustrates both evolution and the interplay between levels of analysis (Saxenian, 1994, Stuart, 1998, Stuart, Hoang, Hybels, 1999). In the early days, with engineers migrating from firm to firm, sharing technical insights and know-how in a frenzy of exploration and innovation, Silicon Valley developed identifiable, trans-firm culture, and norms of relational trust – thus becoming a clan of sorts. As the region grew, technologies matured and critical knowledge became more standardized, the informal clan evolved into a loose and egalitarian confederation of companies, connected and orchestrated through venture capital and legal firms as well as social ties – a trade network of sorts (Castillo*, et al.*, 2000, Walker*, et al.*, 1997). More recently, as the technologies have matured further and Silicon Valley firms have grown and globalized, the collective identity has frayed and the network has begun to dissolve into an even more complex level of analysis – the larger global market.

Together, these examples raise the intriguing possibility of using underlying environmental conditions to predict paths for the evolution of organizational forms. Accordingly, our seventh and final proposition is that *as the relative importance of explicit and tacit knowledge, and of individual and joint knowledge creation change in an industry, firms will reorganize to realize efficiency advantages – leading to a corresponding change in the dominant organizational form in the industry.*

Concluding Remarks

This paper offers a contingency model to classify and explain the amazing variety of organizational forms – including alliances, networks, open-source communities and cooperative systems – used to manage increasingly knowledge-intensive organizations. Our model augments the transaction cost economics market, hierarchy, clan continuum of organizational forms by combining insights from economic sociology and social psychology to add a cooperation dimension that is complementary to the coordination dimension captured by the transaction cost approach. In our understanding, the market-hierarchy continuum of organizational forms assumes that knowledge is divisible and humans motivated by instrumental self interest. Our contribution rests on the observation that knowledge is increasingly collective and jointly developed (without the possibility of metering individual contributions) and the insight that humans are motivated as much by the search for identity as by instrumental self interest. This insight suggests that managers can facilitate collective action not just by aligning individuals' interests but by leveraging the identity groups that form among and structure any collection of individuals. Further, the leveraging of identity self interest is particularly valuable when the knowledge required for performance is knowledge that must be developed jointly. In such situations, we argue that the organizations that leverage identity self interest – clans and organizational democracies – will gain an efficiency advantage over those – markets and hierarchies – that assume instrumental self interest. We thus propose a flexible, coordination/cooperation matrix that arrays market, hierarchy, clan and organizational democracy across a set of knowledge conditions (tacit v. explicit; divisible v. joint). Using this matrix, we explore organizational democracy as a fourth idealized

organizational form; classify a variety of common intermediate forms; and trace the dynamics that shape the evolution of organizational forms.

Our proposed addition of organizational democracy to the market, hierarchy, clan taxonomy illuminates the understudied but pervasive examples of more or less democratic organizations that leverage group identity to generate cooperation and rule-bound competition between groups to achieve coordination. As knowledge intensity increases and there is more call for joint production by knowledge workers and knowledge generating subsidiaries – that is, as the development and maintenance of creative knowledge environments becomes more critical (Hemlin, Allwood, Martin, 2004) – we believe that variations on the organizational democracy form, including commons and trade networks, will become ever more prevalent and elaborate. As such forms proliferate, it may be useful to mine the political science, legal and sociology literatures to develop a deeper understanding of the essential components of commons, trade networks and democratic organizational structures. It would also be useful to augment theoretical exploration with detailed case studies of the full range of democratic organizations, including mixed forms such as the Mondragon system and many universities.

Beyond theoretical and case-based elaboration of the present model, we look forward to several empirical tests of the model. First, it would be useful to test whether managerial choice of organizational form does, in fact, lead to differential survival and performance effects given variation in the underlying knowledge environments. A particularly

daunting test of the usefulness of the proposed model would be whether it could help explain and predict performance differentials between public, private, parochial and experimental schools (Ouchi, 1980, Ouchi, 2006). A more conventional test of the model would be whether it could predict the conditions under which a particular multinational corporation might best be organized as a market of firms, a network of work groups, a democracy of clan-like guilds or another combination that fits a given transactional and social structural context.

Any such test will require the development of new measures. For measures of coordination and the underlying task environment, the established transaction costs economics measures are appropriate (Geyskens*, et al.*, 2006). Measures of the both the relative jointness of knowledge and the influence of identity self interest are not as well developed. Surveys of managers, measures of co-authorship and semantic network analysis of written works should be useful in estimating the degree to which knowledge is joint (Corman*, et al.*, 2002). Measures of the underlying motivational environment are even less developed, although there has been some progress in using surveys to identify the impact of intrinsic, extrinsic and internalized (such as the desire for status) motivations in open source communities (Hertel, Niedner, Herrmann, 2003, Roberts*, et al.*, 2006); the amount of horizontal coordination; the degree of goal congruence among individuals and between individual and groups (measured through surveys); and the shape of social networks (notably the existence or absence of cliques) could all serve as proxies for the strength of the influence of identity self interest (Aoki, 1986, Burt, 2000, Uzzi, 1997, White, 1999, White, 2005).

Both the prediction of optimum organizational forms and the understanding of the evolution of such forms will require a deeper understanding of the causes of form failure – similar in type but reaching well beyond the transaction cost economics explanations of market failure. Recently, Nickerson & Zenger (2008) have made a promising start on this by suggesting the use of social comparison costs to explain firm failure in the direction of markets, while Baker et al (2002) suggest that firms fail when managers lose their influence over relational contracts. Similarly, Ouchi (1980) suggested performance ambiguity (for example, in the case of truly joint effort) as a partial explanation of firm failure in the direction of clans. The erosion of clan and democracy towards firms or markets might well have to do with the tendency of highly normative arrangements to decay unless reinforced continually, often by complementary institutions (*c.f.* the role of Catholicism and Basque identity in the development of the Mondragon cooperatives).

As with all papers, this paper has limitations. One of the most fundamental is its reliance on stylized, pure types and simple hybrids, arrayed across only two dimensions. Clearly, most organizations combine multiple forms at any given point and over time; further, as systems become more complex, the permutations of form combinations – hiearchy and organizational democracy, clan and market, etc – grow exponentially. Equally, other dimensions are quite likely to affect the optimum choice of organizational form. For example, while considering only the assumption of instrumental self-interest and consciously excluding forms such as clans, Makadok & Coff (2009) offer an instructive attempt to model organizational forms across various dimensions – in their case of

ownership, reward strength and authority strength. It could be productive to adapt their approach to different dimensions: identity v. instrumental self-interest, competitive v. authoritative coordination; institutional contexts (Boisot, Child, 1996); and levels of compelexity (from work teams to organizational fields).

Similarly, while we cast a global net in our search for examples of organizational democracy and its hybrids, we do not explore rigorously the possible impact of national culture and/or institutions on the efficiency and evolution of specific forms in specific contexts. For example, Khanna has shown that family business groups are as effective as conventional MNCs to the extent that they fill instutitional voids in emerging economies (Khanna, Palepu, 2000). This perspective is consistent with Mondragon's rise in Franco's Spain, and yet does not explain Mondragon's durability as Spain modernized and adopted European Union institutions. Could it be that the longing to belong and the requirements of knowledge instensity combine to form a context congenial to organization democracy acros multiple institutional landscapes?

More philosophically, while our observations are consistent with the theory and research concerning the interplay of extrinsic and intrinsic motivations, there is scope for further articulation of the types of motivations arrayed along the underlying continuum of motivation. A preliminary suggestion is that human motivation ranges from self-interest as an extension of the drive for self-preservation, through enlightened self-interest, through the survival and pleasure utility of belonging to a social group, to collective identity as an expression of the drive for family-preservation. Similarly, this paper is

concerned almost entirely with the organization of value creation – leaving unexplored the effects of motivation on value appropriation – including the types of value that are considered most precious. In this context, an adequate consideration of value appropriation would have to balance property rights concern with consideration of public goods, use value, the joy of problem solving, and other forms of non-pecuniary value.

The original goal of this paper was to organize the unruly, diverse constellation of established and emerging organizational forms into a unified, manageable framework. By integrating the core foundations of transaction cost economics and economic sociology, we were able to build such a framework. Organizational democracy emerged from this framework as a pure organizational form that is particularly suited to the organization of knowledge-intensive activities in which the essential knowledge is both explicit and jointly created, rendering as self-regulated contest among identity groups efficient. Further, the framework provided useful insight into the dynamics animating the evolution of organizational forms. In the end, however, we will count this paper as successful if it establishes a conceptual connection between organization form and the micro-foundational continuum of motivation that spans opportunistic self-interest and the longing to belong.

CHAPTER 3

KNOWS ME AND MY BUSINESS: HOW PREFERENCE FOR RELATIONAL GOVERNANCE MECHANISMS AFFECTS SMALL FIRM OWNERS' CHOICE OF BANKS

Abstract

This paper explores the relative importance of relational and economic preferences in small business owners' choice of a primary bank. Our data was sampled from the same population of small firms at approximately six-year intervals over two decades and features direct measures of preferences. Our findings showed that both economic and relational criteria were significant when choosing a primary bank; that business owners' preference for relational versus economic governance affected the type of bank chosen; and that the distribution of these preferences across the population remained relatively stable over time. As such, our findings reinforce the role of social relations in shaping (but not dictating) even the most straightforward economic decisions; highlight the continuum of instrumental and identity self interest that underpins business decision-making; and suggest that variations in such preferences are large and persistent enough to create significant and durable business opportunities.

Keywords: Identity; SME; banking; relational governance; relational trust

Introduction

This paper considers the possibility that business decisions are shaped as much by the longing to belong as by the pursuit of a good deal. We start from the insight that the existence and mechanisms of relational governance derive, at least in part, from a psychological drive for identity that is distinct from – and as fundamental as – instrumental self interest. We examine this possibility by asking small business owners to describe their thinking when making seemingly straightforward, rational business choices about their banking arrangements. By exploring the psychological drivers

underlying business decisions, we contribute to the growing effort to plumb the micro-foundations of organizational arrangements and so to unite sociological, social psychological and economic approaches to organization theory (Abell, 1991, Abell, Felin, Foss, 2008, Felin, Zenger, Tomsik, 2009).

One of the primary aims of organizational economics is to describe the most efficient means of governing economic exchange, given the ever-present risk of opportunistic behavior (self-interest seeking with guile) and the realities of bounded rationality (Eisenhardt, 1989, Williamson, 1981, Williamson, 1991). Prodded by the embeddedness perspective's reminder that both actors and exchanges between actors are nested within and conditioned by social relations (Granovetter, 1985), researchers have increasingly paid attention to relational forms of governance – e.g., relational trust and social controls – and how these complement and sometimes substitute for the contractual and structural governance arrangements recommended by transaction cost economics (Cetina, Bruegger, 2002, Williamson, 1994, Woolthius*, et al.*, 2005).

Relational governance has been defined as "a social institution that governs and guides exchange partners on the basis of cooperative norms and collaborative activities" (Poppo*, et al.*, 2008: 1197) and has been widely accepted as part of effective governance of markets, firms and networks (Baker*, et al.*, 2002, Powell, 1990). Relational governance is thought to be especially useful in situations that test the limits of bounded rationality. Thus, when asset specificity is high, and especially when critical efforts are conducted jointly such that measurement and the assignment of value to individuals is impossible (Williamson, 1981), relational governance gains an efficiency advantage over markets,

hierarchies and hybrids (Osterloh, Frey, 2000, Ouchi, 1980). In addition, when exchange partners work together repeatedly, information about reputation spreads quickly, and repeated exchanges encourage shared identity, relational governance reduces transaction costs by reducing the need for monitoring (Argyres*, et al.*, 2007, Barden, Mitchell, 2007, Gulati, Nickerson, 2008, Mayer, Argyres, 2004, Poppo, Zenger, 2002, Starkey*, et al.*, 2000).

While most articles portray relational governance as yet another way to harness instrumental self interest, there are hints in the literature that relational governance may also tap into another fundamental motivating force – the longing to belong to a group that defines one's identity. Economists and sociologists alike have long commented on humans' extraordinary interest in achieving acceptance by one's group (Angwin, Stern, Bradley, 2004, Osterloh, Frey, 2000, Shapiro, 2005, Wrong, 1961). In organization theory, Ouchi's notion of a clan underscores how socialization can generate so much goal congruence that common interest trumps individual self interest (Ouchi, 1980). And in social psychology, social identity theorists describe how humans strive to enhance self-esteem and reduce uncertainty by trying on prototypes until finding a personal identity that brings self-perception, behavior and even cognition in line with salient group exemplars (Bartel, 2001, Hogg, Terry, 2000). Finally, there is evolutionary and psychological evidence that while some individuals within a population act in completely self-interested, even opportunistic, ways, others exhibit strong reciprocity – i.e., the tendency to cooperate with others, and to enforce cooperation, even at significant personal cost (Fehr, Gintis, 2007). Indeed, social organization may have evolved through

the interplay between individuals driven by instrumental self interest and those more motivated by the search for identity with a group (Choi, Bowles, 2007).

Together, these findings suggest that while humans may be autonomous beings who maximize self-interest through independent, rational action, humans are *also* embedded social beings whose very perception of self interest is shaped by the groups that define their identities (Loch*, et al.*, 2006, Ng, Tseng, 2008). Thus, in business, as in life, we can expect to observe a tension between self-interest seeking through identification with a group and self-interest seeking through instrumental, guileful means.

In this paper, we look for evidence of this tension between instrumental and identity motivators by exploring the relative influence of relational and economic logics in the making of a fundamental business decision. In particular, we use survey data collected from small business owners to examine the factors that influence their choice of a primary bank. We look at small firm bank choice because, at first blush, the choice of a bank would appear to be the quintessential economic decision (Saparito, Chen, Sapienza, 2004), driven solely by instrumental considerations of cost, convenience, clarity of contract, and ease of monitoring (Williamson, 1988); in such a setting, it would be surprising and interesting to find identity-driven, relational concerns at work. We use a survey because the survey allows us to peek into the minds of decision makers and so to test our proposition that business decision making is based not only on instrumental motivations but also on identity motivations. Finally, we dip three times over twenty

years into the same pool of small businesses to begin to explore whether any preferences we observed were stable, and therefore perhaps fundamental to the human condition.

The next section presents a model of bank choice and hypotheses about the degree to which small firm owners' banking decisions are motivated by identity versus instrumental concerns. The succeeding section introduces our data set, the variables and the estimation models. The fourth section reports the results. The final section ties the results back to the model of bank choice, and to the underlying questions about motivation, noting the limitations of our approach. We conclude with implications for organization theory and organizational economics, suggestions for further research, and recommendations for policy.

Theory and Hypotheses: The Governance of Firm-Bank Exchanges

Small business owners' choice of a bank is the product of a series of negotiations – a series of exchanges over time – between banker and owner that are shaped by the nature of the transactions, the characteristics of the firm, the offerings and strategy of the bank, proximity, business and personal relationships, and the larger business context, especially the availability and cost of capital (Berger*, et al.*, 2005, Scott, 2004). Because they are well-defined, easily-measured, short-term spot transactions, many banking services, notably the deposit, checking and cash management services used most often by small firms (Bitler*, et al.*, 2001), fit the criteria for transactions that are best organized as a market (Coase, 1937, Ouchi, 1979). Thus, from the firm owner's point of view, the choice of the bank to offer these services is often a straightforward matter of calculation

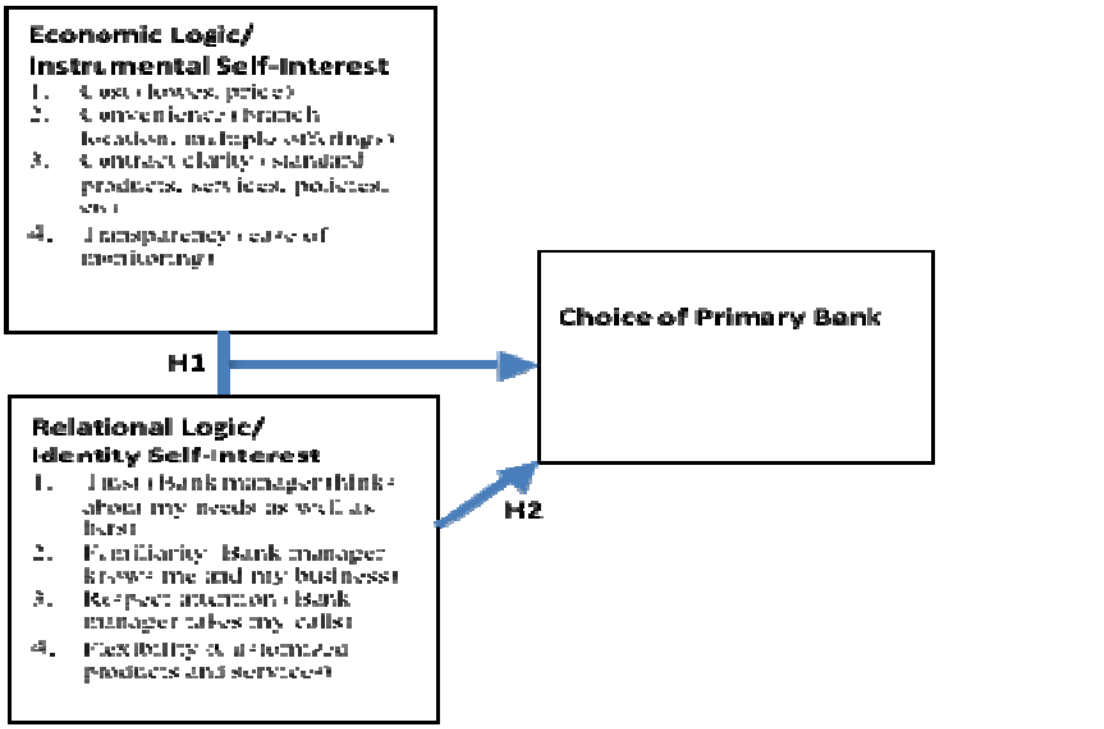
involving price, product selection, convenience, contract clarity and bank stability (Nielsen, Trayler, Brown, 1994, Trayler, Nielsen, Jones, 2000).

On the other hand, because of asymmetries in information and bargaining power between banks and small firms, (Diamond, 1991, Hernandez-Canovas, Martinez-Solano, 2007, Petersen, Rajan, 1994), the lending exchange is less straightforward than other banking services. Although one solution to the information asymmetries is for firms to own banks (cf. the Mondragon system of cooperatives' decision to start a bank, Forcadell, 2005, Morrison, 1991), banks typically try to make a market arrangement work by expending resources to obtain what the finance literature refers to as “private information” about firms (Diamond, 1984, Diamond, 1991, Ramakrishnan, Thakor, 1984, Uzzi, Lancaster, 2003). Importantly, such firm-level private information can be either “hard” information such as financial statements and details about a firm’s transaction account activity or “soft” intelligence obtained through social interactions with owners, suppliers, customers and the community (Berger*, et al.*, 2005, Berger, Udell, 2002). Thus, bankers considering loans to mid-market firms without public debt ratings often try to leverage social ties to increase the flow of private information and so their comfort in making lending decisions (Uzzi, 1999).

From the perspective of the firm owner searching for capital, ongoing relationships with banks can complement, and sometimes substitute for some of the assurances otherwise required by bankers. “Commercial transactions between [mid-sized] firms and banks that are embedded in relationships increase firms’ access to capital and lower their borrowing

costs net of other determinants of lending…" (Uzzi, 1999: 500). Thus, business owners might pursue relationships as a counterbalance to the possibility that bankers will ration funds if they perceive information asymmetry and the opaqueness of business practice to be high (Stiglitz, Weiss, 1981). Empirically, studies suggests that small firms with strong relationships to banks do indeed gain access to more credit (Cole, 1998), reduced demands for collateral (Binks, Ennew, 1997), and, sometimes even lower rates or fees (e.g., Berger, Udell, 1995, Uzzi, 1999).

Figure 3-1. Competing Logics for Choosing a Bank



H2: The proportion of owners who express preference for relational governance will remain constant over time.

Figure 3-1 sketches a model of the criteria that business owners consider when choosing (and maintaining) a banking arrangement. When evaluating their banking options, we expect firm owners to consider and compare economic factors such as interest rates, other bank terms (e.g. collateral, fees) and convenience. At the same time, because of the potential practical importance of relationships in securing access to capital at affordable rates, we also expect firm owners also to consider social and relational factors such as trust, familiarity and attention. Thus, we propose as a baseline reality that not only economic but also relational considerations will affect firm owners' choice of a bank.

Hypothesis 1. Firm owners' choice of a bank will be affected by consideration of <u>both</u> economic and relational criteria.

A Preference for Relational Governance?

A more interesting question is whether a preference for relational governance might, for some business owners, trump short-term economic considerations. Long-term relationships matter to both bankers and business owners because they generate trust and so the possibility of a relational alternative and/or complement to market forms of governance (Dunkelberg, Scott, 1984, Saparito*, et al.*, 2004). Relational trust is characterized by "the confident belief that a 'trustee' will act beneficially because the trustee *cares about the trustor's welfare*" (Saparito*, et al.*, 2004: 400, emphasis added). Once established, it functions as a "remarkably effective lubricant to economic exchange [that] reduces complex realities far more quickly and economically than prediction, authority or bargaining" (Powell, 1990: 305). Thus, in the world of microcredit, we see

dense networks of relationships substituting for credit scoring and collateral in ensuring timely repayment without default rates (Bhatt & Tang, 2002; Bhatt, 2002; Della Giusta, 2003; Granovetter, 1995). Similarly, building and loan societies in the United States were started by closely related groups of families who lent to each other and exerted social pressure to ensure timely repayment and to discourage defaults (Kohn, 2004).

In contemporary times, there is some empirical evidence that relational trust affects small firms' choice of and loyalty to a given bank over and above the impact of the usual transaction cost economics concerns (Saparito*, et al.*, 2004, Yavas, Babakus, Eroglu, 2004). Further, the more actively firms participate in building and maintaining a relationship with their bank, the deeper the exchange of information between, the development of confidence in, and the dependence on each party (Baas, Schrooten, 2006, Ennew, Binks, 1999). Thus, while economic and relational governance elements can be combined in different ways, one empirically common and effective "bundle" of governance elements for firm-banking relationships is highly relational, featuring "personal interface…, a high number of concurrent exchanges, and few enforcement mechanisms" (Bosse, 2008: 189). Finally, to the extent that psychologists are right about the role of identity in driving behavior and the possibility that some proportion of individuals may be especially inclined to cooperate with others, some business owners may simply prefer to manage business exchanges through relationships. For all these reasons, and holding all else constant, we expect a preference for relational governance elements such as relational trust to be associated with the choice of a bank that emphasizes relationships in its banking practices.

Hypothesis 2. Firm owners' choice of a relationship-oriented bank will be affected by their relative preference for relational criteria.

Since the early 1990s, the US banking industry has consolidated dramatically, with large banks' share of domestic assets increased from 66 percent to 80 percent (Jagtiani, 2008). As consolidation reduced the total number of banks, small business owners had fewer banks from which to choose. Similarly, as large banks consolidated their holdings, they often added layers to their bureaucracies, increased their use of technology, and relied ever more on hard information for loan decisions, thus becoming the very antithesis of the personal, relationship-oriented local bank. Given these changes in the industry, we would expect firm owners to be forced to abandon any hope for relational governance when interacting with banks. But to the extent that the preference for relational governance is deeply rooted in psychology and even biology (Choi, Bowles, 2007, Dunbar, 2003, Dunbar, Schultz, 2007, Fehr, Gintis, 2007, Tooby*, et al.*, 2006), these preferences and their impacts on decision making should prove quite durable. That is, we would expect the relative preference for relational governance to remain constant over time, even if conditions changed in ways that would seem to devalue that logic.

Hypothesis 3: The impact of the relative preference for relational criteria on firm owners' choice of a bank will remain constant over time.

Method

To test these hypotheses, we used survey data collected from the National Federation of Independent Businesses – all small business owners – concerning factors that affect owners' choice of a primary bank. The NFIB surveys were ideal for our purposes because they included questions – first asked in 1980 – about the criteria that firm owners consider most important when conducting financial business.

Data

Our data were drawn from the NFIB's Credit, Banks and Small Business (CBSB) surveys conducted in 1987, 1995, and 2001. For each survey, the questionnaire was mailed twice within two weeks to a random sample of members, and duplicate responses were eliminated. There were 1921 respondents to the 1987 survey, 3642 to the 1995 survey and 2223 to the 2001 survey. Response rates declined from 26 percent in 1987 to 20 percent in 1995 and 18 percent in 2001. Long experience with NFIB surveys suggests that no systematic self-reporting bias existed in the responses to the survey questions. For example, historically, there has been little survey response bias with respect to number of employees, sales, industry and region of the NFIB membership (Dunkelberg, Scott, 1983).

Table 3-1 summarizes key demographic statistics for the firms that reported a commercial bank as their primary financial institution. Between 61 and 65 percent of respondents were located in urban locations, and the regional distribution of firms was also fairly stable, albeit with increased responses from firms in the Midwest and decreased responses from the West region in the more recent surveys. Firm demographics showed

small changes over time, with increases in both firm age and size (as measured by full-time equivalent employees). The changes that occurred in industry distribution corresponded with changes in the overall economy. For example, construction and agriculture (which includes nursery/lawn care) increased across the periods, while the proportion of retail firms decreased as the industry consolidated. Finally, in keeping with consolidation in the banking industry, the proportion of small firm owners using a community bank as their primary financial institution fell from 65 percent in 1987 to 47 percent in 2001.

Table 3.1. Definitions and Summary Statistics for Credit, Banks and Small Business Survey Data

Variable name and definition		1987		1995		2001	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
A. Importance criteria central to a banking relationship[a]							
Knows my business	Rated from 5= very important to 1=not important	2.66	0.56	4.47	0.96	4.46	0.87
Provides helpful advice	Rated from 5= very important to 1=not important	1.81	0.76	3.25	1.35	3.34	1.20
Wants cheapest money	Rated from 5= very important to 1=not important	2.38	0.67	4.08	1.09	4.13	1.05
Convenient location	Rated from 5= very important to 1=not important	2.25	0.71	3.87	1.14	4.26	0.88
Reliable credit source	Rated from 5= very important to 1=not important	2.62	0.58	4.37	0.95	4.36	0.95
Knows my industry	Rated from 5= very important to 1=not important	2.08	0.74	3.55	1.31	3.65	1.15
Speed of decision making	Rated from 5= very important to 1=not important	2.55	0.56	4.34	0.85	4.31	0.85
Easy access to loan officer	Rated from 5= very important to 1=not important	2.52	0.62	4.29	0.95	4.28	0.94
Wide range of services	Rated from 5= very important to 1=not important	2.22	0.67	3.62	1.13	3.78	0.99
Knows local market	Rated from 5= very important to 1=not important	2.30	0.69	3.75	1.20	3.84	1.08
Social contact with loan officer[b]	Rated from 5= very important to 1=not important	2.43	0.66	2.49	1.43	2.92	1.36
B. Firm characteristics							
Years in business	Years in business	14.4	12.8	16.1	13.4	19.0	14.1
FTE	Full-time equivalent employees	15.3	30.8	15.9	44.8	16.9	50.6
Loan outstanding	1 if 'Yes' and 0 otherwise if they have a current loan	0.67	0.47	0.69	0.46	0.61	0.49
Denied on last loan try	1 if 'Yes' and 0 otherwise for those that applied for a loan	0.20	0.40	0.16	0.37	0.11	0.31
Number of banks used	Number of banks used	NA	NA	2.44	2.68	1.55	0.90
Form of business							
Proprietorship	1 if the firm is organized as a proprietorship	0.34	0.47	0.29	0.46	0.25	0.44
Partnership	1 if the firm is organized as a partnership or LLC	0.08	0.27	0.06	0.23	0.08	0.20
Corporation	1 if the firm is organized as a corporation	0.57	0.50	0.43	0.49	0.41	0.49
S-Corporation	1 if the firm is organized as an S-corporation	NA	NA	0.21	0.41	0.25	0.49
Industry							
Agriculture	1 if a firm's primary activity is agriculture	0.04	0.19	0.08	0.27	0.07	0.25
Manufacturing	1 if a firm's primary activity is manufacturing	0.13	0.34	0.13	0.34	0.12	0.33
Construction	1 if a firm's primary activity is construction	0.11	0.31	0.13	0.33	0.15	0.36

Table 3.1. continued

Transportation	1 if a firm's primary activity is transportation	0.03	0.17	0.03	0.17	0.04	0.19
Wholesale	1 if a firm's primary activity is wholesale	0.10	0.29	0.06	0.24	0.10	0.30
Retail	1 if a firm's primary activity is retail	0.24	0.43	0.22	0.41	0.20	0.40
Finance	1 if a firm's primary activity is financial services	0.08	0.27	0.07	0.25	0.06	0.24
Services	1 if a firm's primary activity is non-professional services	0.20	0.40	0.20	0.40	0.15	0.36
Professional	1 if a firm's primary activity is professional services	0.08	0.27	0.05	0.21	0.07	0.25
C. Bank location and market structure							
Small bank	1 if the owner's principal bank has assets less than $1 billion	0.65	0.48	0.56	0.50	0.47	0.50
Urban location	1 if the firm is located in a MSA area (0 = non-MSA area)	0.61	0.49	0.65	0.48	0.63	0.48
Region (combined Census regions)							
Northeast	1 if the firm is located in New England or Mid-Atlantic	0.13	0.33	0.14	0.35	0.15	0.36
South	1 if the firm is located in South Atlantic or East South Central	0.19	0.39	0.17	0.38	0.16	0.37
Midwest	1 if the firm is located in East North Central	0.14	0.34	0.21	0.41	0.24	0.43
Plains	1 if the firm is located in West South Central or West North Central	0.22	0.42	0.22	0.41	0.22	0.41
West	1 if the firm is located in Pacific or Mountain	0.32	0.47	0.26	0.44	0.22	0.42

a The ratings in the 1987 survey are based on a 3 point scale (1=not important to 3=important)
b In the 1987 survey this characteristic was 'Do business with one person.'

Variables

Our independent variables were the relative importance (reported on a Likert scale) of the criteria respondents considered when choosing a bank.[4] The scale ranged from 1 (not important) to 5 (very important) in 1995 and 2001; in 1987, the scale ranged from 1 to 3. The criteria included *knows my business*, *provides helpful advice*, *wants cheapest money*, *location*, *reliable as a source of credit*, *knows my industry*, s*peedy decisions*, *easy access to the loan officer*, *wide range of services*, *knows local market*, and *social contact with loan officer*.[5] Of these, the criteria *knows my business*, *knows my industry*, *knows the local market/community*, and *social contact with loan officer* seem to be consistent with relational concerns. Further, these are similar to items used by Madill et al (2002) to capture relationship management activities and with items used by Saparito et al (2004) to capture both customer orientation and relational trust. Conversely, criteria such as *wants cheapest money*, *location* and *wide range of services* seem more closely aligned with more purely economic concerns.

Our dependent variable was bank size, with 1 denoting the choice of a small bank and 0 the choice of a large bank. We used the choice of a small bank as a proxy for the choice of a relationship-oriented bank because smaller banks have been shown to be better at building, maintaining and using relationships to produce and leverage soft (relationship-based) information for decision making (Berger*, et al.*, 2005, Scott, 2004). Further, the

[4] While some firms may use more than one bank, it is common for small firms, such as those in our sample, to do most of their business with a primary bank. In the 2001 survey, almost 60 percent of the respondents reported using one bank only, with 27 percent reporting using two; in the 1995 survey the percentages were 63 and 25, respectively. While our data do not tell us whether the respondents were thinking about their primary bank when answering the survey, we did include "number of banks" as a control variable in 1995 and 2001, and this variable had no significant impact on the results reported below.

[5] The "social contact with loan officer" item was used in 1995 and 2001; in 1987, the wording for this item was "deal with one person only."

flatter organizational structure of small banks enables them to reduce and control the agency and transmission costs associated with the use of soft information (Berger, Udell, 2002) and to maintain more exclusive and informative relationships (Berger*, et al.*, 2005). For their part, larger banks rely more on hard information such as credit scoring because it can be transmitted readily through their elaborate organizational hierarchies (Stein, 2002) and because hard information fits more comfortably within their centralized decision-making regimes (Akhavein, Frame, White, 2005). Thus, while no bank relies solely on relationship banking (Berger, Udell, 2006), the predilections and structure of small banks make it likely that they will rely on relational governance to a greater extent than do their larger competitors.

To determine bank size, the respondents were asked to report bank size intervals and/or the name of their bank. For the 1995 and 2001 surveys, all responses were further cross-checked for accuracy when a bank name was given. We defined a bank as "small" if its assets were less than $1 billion. This definition is not entirely clear cut, because community banks can also be defined in terms of deposit mix or loan mix (DeYoung et al, 2004), while the legal definition of a community financial institution caps assets at an inflation-adjusted $500 million.[6] Still, the $1 billion asset threshold has been used frequently in the finance literature (Brickley, Linck, Smith, 2003, Cole, Goldberg, White, 2004). Further, there were no material effects on our primary results when conducting

[6] See CFR, 12 USC 1422(13). During the period of our study, community banks were defined as banks with total assets that averaged under $500 million for the previous three years as of the date of enactment, with adjustments made annually based on CPI inflation. The definition was revised to $1 billion in with ongoing adjustments to inflation in the Housing and Economic Recovery Act of 2008.

the analysis using a $500 million threshold or using categories such as up to $100 million, $100-500 million, etc.

Controls

We included a variety of control variable and robustness analyses to increase confidence that any associations between the criteria and bank choice were not due to some unrecognized correlation between the independent variables and an omitted variable. First, we included standard items including *years in business, full-time equivalent employees, form of business*, and 1-digit SIC *industry classification*. Second, because the intensity of bank usage might affect either a firm's choice of a bank or a bank's comfort with a particular firm, we added control variables for the outcome of the last loan try (*turndown*), whether or not the owner had a loan outstanding (*loan outstanding*) and bank usage (*number of banks used*). Third, to control for the possibility that bank choice might be affected by limited bank choice in a given area (especially given industry consolidation), we included a set of variables designed to capture the banking industry structure in that geographical areas. These included deposit concentration as measured by a Herfindahl-Hirshmann index by Metropolitan Statistical Area or rural county and a set of 1/0 variables for each region of the country (*East, Plains,* etc).[7]

Finally, we conducted two additional analyses to control for the possibility that the choice of a small bank could be purely a function of firm size. One concern was that small firms might prefer small banks simply because managers of small banks might pay more

[7] For the 1987 survey, an HHI index could not be used because zip codes are not reported. Thus a 1/0 variable for MSA location is used in its place.

attention to small business owners. Alternately, small firms might be driven to small banks because of large banks' concern about the quality of the information provided by small firms (Berger, Udell, 1995, Berger, Udell, 1998), especially if there were no audited financials, if business and personal assets were co-mingled (Petersen, Rajan, 1994), if the firm were young, if it were new, if it competed in a volatile industry and/or if it were managed by an entrepreneur who was unusually committed to maintaining control (Huyghebaert, Van de Gucht, Van Hulle, 2007). While small banks would share the concerns of larger banks, they might be more equipped to compensate for such uncertainties through their ability to collect and use soft, relationship-based information. In any case, we controlled for the impact of firm size both by including a control variable on firm size and by conducting an additional analysis that considered the interaction effects between firm size and desired bank characteristics.

Results

A first inspection of the summary statistics (Table 3-1) shows that the relative rankings of the importance of the various criteria involved in bank choice remained fairly consistent across the samples (remembering that 1987 was reported on a 1-3 scale and the others on a 1-5 scale). Small firm owners placed the most weight on *knows my business*, followed by *reliable source of credit*, *speedy decisions* and *easy access to loan officer*. Comparing the 2001 to 1995 survey, for example, the only major change in the ratings was for *location*, for which the average rating increased to 4.26 from 3.87.

The correlation table (Table 3-2) indicates relatively low correlations between most of the criteria. For example, in the 2001 survey, the correlations range from a low of 0.05

between *provides helpful suggestions* and *location* to a high of 0.62 between *speedy decision* and *easy access to loan officer*. The variation among the correlations suggests that owners expressed clear preferences about different dimensions of their banking relationship and did not just mechanically respond as if all dimensions are equally important or not important. At the same time, the presence of some moderate correlations suggests the possibility of underlying constructs that result in patterns of relationships among the variables.

Table 3-2. Correlations Between Bank Choice Criteria

	Correlation Coefficients										
A. 1987 Survey	Knows my business	Provides helpful suggest.	Wants cheap-est money	Location important	Reliable credit source	Knows my industry	Speedy decision	Easy access to loan officer	Wide range of services	Knows local market	Social contact with loan officer
Knows my business	1.000	0.249	0.108	0.051	0.322	0.368	0.270	0.335	0.125	0.234	0.307
Provides helpful suggest.		1.000	0.144	0.061	0.158	0.326	0.194	0.204	0.219	0.246	0.176
Wants cheapest money			1.000	0.119	0.342	0.199	0.189	0.257	0.151	0.165	0.272
Location important				1.000	0.151	0.085	0.136	0.119	0.280	0.187	0.117
Reliable credit source					1.000	0.324	0.342	0.428	0.210	0.246	0.375
Knows my industry						1.000	0.306	0.302	0.233	0.387	0.264
Speedy decision							1.000	0.570	0.360	0.306	0.300
Easy access to loan officer								1.000	0.388	0.335	0.406
Wide range of services									1.000	0.471	0.203
Knows local market										1.000	0.210
Deal with one person											1.000
B. 1995 Survey											
Knows my business	1.000	0.347	0.140	0.045	0.311	0.449	0.282	0.328	0.216	0.352	0.196
Provides helpful suggest.		1.000	0.179	0.117	0.219	0.396	0.212	0.230	0.342	0.355	0.271
Wants cheapest money			1.000	0.210	0.369	0.215	0.269	0.322	0.228	0.182	0.144
Location important				1.000	0.172	0.126	0.202	0.145	0.314	0.226	0.181
Reliable credit source					1.000	0.376	0.419	0.529	0.275	0.277	0.149
Knows my industry						1.000	0.334	0.345	0.312	0.483	0.259
Speedy decision							1.000	0.598	0.373	0.340	0.199
Easy access to loan officer								1.000	0.418	0.381	0.270
Wide range of services									1.000	0.530	0.311
Knows local market										1.000	0.350
Social contact w/ loan officer											1.000
C. 2001 Survey											
Knows my business	1.000	0.390	0.190	0.050	0.350	0.451	0.395	0.402	0.254	0.366	0.250
Provides helpful suggest.		1.000	0.212	0.049	0.280	0.442	0.277	0.300	0.338	0.360	0.265
Wants cheapest money			1.000	0.181	0.451	0.260	0.336	0.420	0.289	0.214	0.168
Location important				1.000	0.167	0.075	0.173	0.120	0.281	0.178	0.167
Reliable credit source					1.000	0.409	0.432	0.590	0.310	0.303	0.211
Knows my industry						1.000	0.422	0.405	0.328	0.475	0.315

Table 3-2. continued

Speedy decision							1.000	0.622	0.379	0.374	0.239
Easy access to loan officer								1.000	0.419	0.387	0.280
Wide range of services									1.000	0.502	0.331
Knows local market										1.000	0.390
Social contact with loan officer											1.000

Factor Analysis

To explore the possibility of such underlying constructs, we applied factor analysis (using a varimax rotation) to identify independent (more or less orthogonal) combinations of criteria that maximized the total variance explained and, presumably, reflected underlying preferences. The results of the factor analysis are summarized in Table 3-3.

Three factors have eigenvalues greater than 1.0; combined, these three factors account for 53 to nearly 60 percent of the variance in the data, depending on the year. We interpret Factor 1 as an **"economic" factor** because it collects cost and efficiency criteria: *interest rate, reliability of credit, speed of decision* and *access to loan officer*. Depending on the year, this factor explained between 20 to 24 percent of the overall variance. Factor 2 is the **relational factor** because of its high loadings on *knowledge of the business, knowledge of local market, knowledge of industry, helpful business suggestions, and social contact*. This factor explained approximately 24% of the overall variance in 2001; 21% in 1995; and 17% in 1987. Factor 3 can be interpreted as a **convenience factor** inasmuch as *number of locations* and *range of services* reflect the convenience of one-stop service at nearby locations or simply the availability of branches. Arguably, convenience reflects another variation of economic considerations. In any case, the incremental variance explained by this factor was lower, ranging from 12 to 15 percent.

Table 3-3. Rotated Factor Analysis Results

2001 Rotated Factors
LR test: chi2(55) = 6001.5 Prob>chi2 = 0.0
Number of observations = 1851

	Variance	*Proportion*	*Cumulative*
Factor 1 Economic	2.623	0.238	0.238
Factor 2 Relational	2.596	0.236	0.475
Factor 3 Convenience	1.325	0.121	0.595

Rotated factor loadings

Variable	Factor1	Factor2	Factor 3	Unique-ness
Know me/my business	0.382	**0.601**	-0.193	0.456
Helpful suggestions	0.181	**0.690**	-0.061	0.488
Cheapest money	**0.709**	-0.023	0.247	0.436
Location	0.114	-0.013	**0.840**	0.282
Reliable source	**0.785**	0.184	0.063	0.346
Knows industry	0.378	**0.669**	-0.057	0.407
Speed of decisions	**0.667**	0.328	0.106	0.437
Easy access	**0.779**	0.299	0.082	0.298
Range of services	0.285	0.480	**0.525**	0.413
Knows local market	0.193	**0.698**	0.297	0.388
Social contact with bank	0.019	**0.604**	0.360	0.506

1995 Rotated Factors
LR test: chi2(55) = 8608.8 Prob>chi2 = 0.00
Number of observations = 2940

	Variance	*Proportion*	*Cumulative*
Factor 1 Economic	2.380	0.216	0.216
Factor2 Relational	2.295	0.209	0.425
Factor3 Convenience	1.654	0.150	0.575

Variable	Factor 1	Factor 2	Factor 3	Unique-ness
Know me/my business	0.299	**0.703**	-0.161	0.390
Helpful suggestions	0.063	**0.683**	0.187	0.495
Cheapest money	**0.604**	-0.032	0.244	0.575
Location	0.165	-0.119	**0.768**	0.369
Reliable source	**0.775**	0.199	0.031	0.358
Knows industry	0.320	**0.698**	0.064	0.407
Speed of decisions	**0.712**	0.201	0.194	0.416
Easy access	**0.755**	0.256	0.173	0.334
Range of services	0.273	0.355	**0.631**	0.401
Knows local market	0.199	**0.608**	0.450	0.388
Social contact with bank	-0.013	**0.437**	0.520	0.539

1987 Factors
LR test: chi2(55) = 3200.7 Prob>chi2 = 0.00
Number of observations = 1392

	Variance	*Proportion*	*Cumulative*
Factor 1 Economic	2.249	0.205	0.205
Factor 2 Relational	1.830	0.166	0.371
Factor 3 Convenience	1.801	0.164	0.535

Variable	Factor 1	Factor 2	Factor3	Unique-ness
Know me/my business	0.391	**0.620**	-0.088	0.455
Helpful suggestions	-0.023	**0.680**	0.183	0.504
Cheapest money	**0.638**	-0.105	0.124	0.567
Location	0.122	-0.235	**0.677**	0.472
Reliable source	**0.727**	0.163	0.117	0.432
Knows industry	0.260	**0.669**	0.173	0.455
Speed of decisions	0.480	0.269	0.387	0.547
Easy access	**0.605**	0.296	0.330	0.438
Range of services	0.127	0.197	**0.784**	0.330
Knows local market	0.105	0.452	0.606	0.418
Deal with one person	**0.674**	0.201	0.049	0.503

Regression Analysis

To address the three hypotheses directly, we used logistic regression to relate choice of *bank size* to the criteria (for example, *offers cheapest money, convenient location, reliable source of credit, knows your industry, speed of decision making, easy access to loan officer*); to the three preference factor scores; and to the control variables. The estimation equation was:

$$\textit{Bank size}\ (\text{small bank}=1) = a_0 + b_{1\text{-}4}\textit{Cost criteria} + b_{5\text{-}9}\textit{Relational criteria} + b_{10\text{-}11}\textit{Convenience criteria} + \textit{control variables} + e$$

Table 3-4 presents the logistic regression results for the criteria and factors. The 2001 Survey results are in Panel A, the 1995 Survey results in Panel B, and the 1987 Survey results in Panel C. In each panel, Model 1 reports the results of using the criteria without controls variables, and Model 2 substitutes the cost, relational and convenience factors for the specific criteria – again without any control variables. Model 3 adds the control variables to the Model 1 (criteria) estimates and Model 4 adds the control variables to the Model 2 (factor scores) estimates. Finally, Models 5 and 6 include the additional control variables used for tests of robustness.

For Hypothesis 1, the null hypothesis was that small firm bank choice is independent of the various criteria measures ($b_{1\text{-}11}= 0$). Looking first at the results of Model 1 for all three samples, the Wald chi square test and associated p-values for these logistic regressions allow us to reject the null version of Hypothesis 1. That is, for every year, there *was* a significant association between bank choice and many (even most) of the economic, relational and convenience criteria. Further, these results do not change appreciably when control variables are added (Model 3).

Substituting the factor scores for each set of importance measures (Model 2) improves interpretability while also providing support for Hypothesis 1. For the 1987 sample, there was a significant association between the choice of a small bank and the relational factor. For the 1995 sample, there was a significant association between the choice of a small bank and both the economic and the relational factors. And for the 2001 sample, there was a significant association between bank choice and all three factors. In all years, the economic and relational factors were associated with choice of a small bank while the convenience factor was associated with the choice of a large bank (the sign is negative). Taken together, these findings suggest that in general, a small firm owner's choice of a primary bank is affected by relational, economic and convenience factors – especially perhaps relational factors.

Table 3-4. Determinants of Bank Choice

Panel A: 2001 Survey	**Model 1**			**Model 2**			**Model 3**			**Model 4**			**Model 5**			**Model 6**		
	Coef.	Std Err		Coef.	Std Err		Coef.	Std Err		Coef.	Std Err		Coef.	Std Err		Coef.	Std Err	
Importance criteria																		
Wants cheapest money	-0.083	0.048	*				-0.087	0.047	*				-0.102	0.047	**			
Reliable credit source	0.140	0.052	***				0.162	0.054	***				0.173	0.052	***			
Speedy decision	0.012	0.042					0.014	0.067					-0.011	0.072				
Easy access to loan officer	0.037	0.071					0.062	0.072	**				0.069	0.077				
Economic factor score				0.086	0.043	**				0.123	0.046	***				0.0778	0.0519	
Economic factor score x FTE																0.0038	0.0009	***
Knows my business	0.138	0.069	**				0.149	0.073	**				0.153	0.075	**			
Provides helpful advice	-0.006	0.044					-0.005	0.045					-0.010	0.045				
Knows my industry	-0.009	0.066					0.001	0.042					0.016	0.043				
Knows local market	0.132	0.053	**				0.115	0.052	**				0.094	0.055	*			
Social contact with loan officer	0.115	0.039	***				0.096	0.039	**				0.097	0.036	***			
Relational factor score				0.226	0.043	***				0.217	0.041	***				0.2404	0.0313	***
Relational factor score x FTE																-0.0014	0.0013	
Location important	-0.111	0.063	*				-0.175	0.068	***				-0.161	0.068	**			
Wide range of services	-0.159	0.058	***				-0.150	0.061	**				-0.134	0.063	**			
Convenience factor score				-0.098	0.042	**				-0.153	0.046	***				-0.1626	0.0276	***
Convenience factor score x FTE																0.0005	0.0006	
Firm characteristics																		
Log of years in business							-0.083	0.072		-0.085	0.073		-0.129	0.074	*	-0.0824	0.0413	*
Log of FTE							-0.233	0.058	***	-0.235	0.060	***	-0.247	0.059	***	-0.2570	0.0289	***

Table 3-4. continued

Partnership							0.254	0.111	**	0.253	0.111	**	0.235	0.108	**	0.2369	0.0404	***
Proprietorship							0.089	0.157		0.079	0.156		0.066	0.167		0.0475	0.0972	
Agriculture							0.117	0.183		0.096	0.182		0.182	0.187		0.0809	0.2957	
Construction							0.009	0.163		0.024	0.159		0.073	0.171		0.0205	0.2342	
Manufacturing							0.190	0.178		0.129	0.172		0.224	0.181		0.1108	0.2791	
Transportation							0.250	0.251		0.202	0.242		0.231	0.248		0.1914	0.1940	
Wholesale							-0.171	0.158		-0.201	0.156		-0.163	0.156		-0.2121	0.1947	
FIRE							0.229	0.160		0.211	0.156		0.095	0.157		0.2053	0.1822	
Services							-0.052	0.156		-0.071	0.155		-0.004	0.167		-0.0820	0.1839	
Professional							-0.144	0.195		-0.154	0.189		-0.159	0.208		-0.1639	0.3683	
Bank Usage																		
Turned down on recent try													-0.532	0.128	***			
Loan outstanding													-0.159	0.101				
Number of banks used													0.065	0.058				
Market Structure																		
Deposit concentration													1.667	0.449	***			
Northeast													-0.106	0.164				
South													-0.132	0.158				
Plains													0.869	0.135	***			
West													-0.221	0.142				
Constant	-0.957	0.339	***	-0.156	0.059	***	-0.262	0.438		0.366	0.415		-0.525	0.445		0.5529	0.1215	***
No. of obs	1,851			1,851			1,851			1,851			1,845			1,851		
Wald chi-square	64.0			39.0			179.5			227.0			372.9			78.9		
p-value	0.000			0.000			0.041			0.000			0.079			0.079		

Table 3-4. continued

Wald Linear Restriction Tests	χ^2	$P>\chi^2$		χ^2	$P > \chi^2$		χ^2	$P >\chi^2$	
Economic characteristics = 0	9.7	0.046		11.1	0.025		13.2	0.103	
Relational Characteristics =0	22.9	0.000		20.4	0.001		20.07	0.001	
Convenience Characteristics =0	14.2	0.001		17.9	0.000		14.25	0.001	

Panel B: 1995 Survey	**Model 1**			**Model 2**			**Model 3**			**Model 4**			**Model 5**			**Model 6**		
	Coef.	Std Err		Coef.	Std Err		Coef.	Std Err		Coef.	Std Err		Coef.	Std Err		Coef.	Std Err	
Criteria																		
Wants cheapest money	0.035	0.039					0.034	0.039					0.031	0.040				
Reliable credit source	0.121	0.052	**				0.156	0.054	***				0.137	0.056	**			
Speedy decision	-0.083	0.051					-0.077	0.049					-0.051	0.054				
Easy access to loan officer	0.171	0.062	***				0.177	0.063	**				0.146	0.062	**			
Economic factor score				0.134	0.042	***				0.162	0.033	***				0.1754	0.0527	***
Economic factor score x FTE																-0.0008	0.0006	
Knows my business	0.120	0.048	**				0.153	0.049	***				0.150	0.050	***			
Provides helpful advice	-0.016	0.038					-0.010	0.039					0.000	0.038				
Knows my industry	-0.161	0.038	***				-0.166	0.038	***				-0.160	0.039	***			
Knows local market	0.138	0.046	***				0.090	0.047	*				0.062	0.047				
Social contact with loan officer	0.132	0.028	***				0.130	0.028	***				0.117	0.030	***			
Relational factor score				0.127	0.019	***				0.132	0.035	***				0.1071	0.0501	**
Relational factor score x FTE																0.0106	0.0238	
Location important	-0.089	0.044	**				-0.116	0.044	***				-0.081	0.043	*			
Wide range of services	-0.074	0.052					-0.071	0.052					-0.049	0.055				
Convenience factor score				0.037	0.056					-0.017	0.049					-0.0490	0.0328	

Table 3-4. continued

Convenience factor score x FTE														0.0017	0.0002	***
Firm characteristics																
Log of years in business			-0.026	0.055		-0.015	0.052		-0.038	0.054		-0.0178	0.0381			
Log of FTE			-0.293	0.046	***	-0.293	0.043	***	-0.324	0.053	***	-0.2731	0.0390	***		
Partnership			0.094	0.084		0.084	0.083		0.087	0.086		0.0882	0.0785			
Proprietorship			0.160	0.176		0.150	0.162		0.190	0.175		0.1548	0.1596			
Agriculture			0.022	0.155		0.005	0.157		-0.026	0.158		0.0028	0.1195			
Construction			-0.277	0.099	***	-0.301	0.105	***	-0.201	0.100	**	-0.3022	0.0962	***		
Manufacturing			-0.112	0.131		-0.122	0.132		-0.036	0.126		-0.1202	0.1388			
Transportation			0.200	0.243		0.139	0.245		0.260	0.257		0.1619	0.2650			
Wholesale			-0.514	0.161	***	-0.497	0.164	***	-0.502	0.169	***	-0.5021	0.1506	***		
FIRE			-0.287	0.155	*	-0.296	0.151	**	-0.246	0.167		-0.3041	0.1749	*		
Services			-0.490	0.094	***	-0.478	0.090	***	-0.400	0.109	***	-0.4736	0.0840	***		
Professional			-0.461	0.205		-0.420	0.204	**	-0.420	0.225	*	-0.4290	0.1773	**		
Bank Usage																
Turned down on recent try									-0.236	0.094	**					
Loan outstanding									0.151	0.071	**					
Number of banks used									0.030	0.020						
Market Structure																
Deposit concentration									1.259	0.396	***					
Northeast									-0.557	0.148	***					
South									-0.438	0.108	***					
Plains									0.988	0.108	***					
West									-0.612	0.090	***					

Table 3-4. continued

Constant	-0.940	0.293	***	0.256	0.086	-0.139	0.315	1.102	0.162	-0.514	0.389	1.0728	0.1263	***
No. of obs	2,914			2,914		2,914		2,914		2,914		2,914		
Wald chi-square	113.0			49.6		276.9		167.9		538.7		113.2		
p-value	0.023			0.000		0.046		0.000		0.098		0.000		
Wald Linear Restriction Tests	*χ2*	*P>χ2*				*χ2*	*P > χ2*			*χ2*	*P > χ2*			
Economic characteristics = 0	27.0	0.000				34.1	0.000			23.4	0.000			
Relational Characteristics =0	64.0	0.000				54.7	0.000			39.9	0.000			
Convenience Characteristics =0	8.5	0.014				12.4	0.002			5.8	0.056			

Panel C: 1987 Survey	**Model 1**			**Model 2**			**Model 3**			**Model 4**			**Model 5**			**Model 6**		
	Coef.	Std Err		Coef.	Std Err		Coef.	Std Err		Coef.	Std Err		Coef.	Std Err		Coef.	Std Err	
Criteria																		
Wants cheapest money	0.001	0.092					-0.043	0.101					-0.139	0.109	*			
Reliable credit source	-0.129	0.122					-0.115	0.123					-0.156	0.138				
Speedy decision	-0.115	0.142					-0.096	0.137					-0.038	0.155				
Easy access to loan officer	0.176	0.130					0.206	0.130					0.214	0.141				
Do business with 1 person	-0.202	0.094	**				-0.185	0.092	**				-0.120	0.107				
Economic factor score				-0.085	0.054					-0.077	0.054					-0.0451	0.0297	
Economic factor score x FTE																-0.0029	0.0005	***
Knows my business	0.000	0.097					0.008	0.104					-0.033	0.112				
Provides helpful advice	0.028	0.089					0.007	0.090					0.025	0.097				
Knows my industry	0.496	0.118	***				0.052	0.088					0.008	0.100				
Knows local market	0.056	0.087					0.448	0.125	***				0.408	0.138	***			

Table 3-4. continued

Relational factor score				0.165	0.045	***		0.156	0.047	***		0.1936	0.0610	***
Relational factor score x FTE												-0.0028	0.0006	***
Location important	-0.110	0.091					-0.115	0.090			-0.068	0.104				
Wide range of services	-0.180	0.095	*				-0.180	0.094	*		-0.179	0.109				
Convenience factor score				0.069	0.053			0.048	0.057			0.0980	0.0576	*
Convenience factor score x FTE												-0.0036	0.0012	***
Firm characteristics														
Log of years in business							-0.033	0.068		-0.003	0.064	-0.079	0.080	-0.0133	0.0902	
Log of FTE							-0.066	0.061		-0.074	0.062	0.012	0.067	-0.0429	0.0425	
Partnership							0.369	0.247		0.380	0.245	0.182	0.239	0.3849	0.2492	
Proprietorship							0.291	0.168		0.300	0.166	*	0.261	0.206	0.3160	0.1208	***
Agriculture							0.088	0.300		0.066	0.292	-0.179	0.371	0.0362	0.3013	
Construction							0.062	0.198		0.038	0.192	0.190	0.226	0.0363	0.3510	
Manufacturing							-0.123	0.220		-0.230	0.211	-0.007	0.226	-0.2556	0.2084	
Transportation							-0.053	0.342		-0.164	0.347	-0.042	0.334	-0.1705	0.2677	
Wholesale							-0.297	0.255		-0.362	0.251	-0.239	0.282	-0.3721	0.3275	
FIRE							-0.362	0.272		-0.383	0.274	-0.181	0.300	-0.3903	0.3020	
Services							-0.498	0.185	***	-0.543	0.177	***	-0.362	0.191	*	-0.5596	0.2384	**
Professional							-0.174	0.273		-0.180	0.269	0.016	0.288	-0.1833	0.2238	
Bank Usage																
Turned down on recent try												-0.146	0.182			
Loan outstanding												-0.126	0.157			
Number of banks used																
Market Structure																
MSA												-0.679	0.147	***		
Northeast												-0.977	0.194	***		
South												-0.887	0.202	***		
Plains												0.154	0.234			
West												-1.377	0.215	***		

Table 3-4. continued

Constant	0.680	0.341	**	0.661	0.055	***	1.004	0.491	**	0.922	0.313	***	2.184	0.576	***	0.8874	0.4262	**
No. of obs	1,392			1,392			1,392			1,392			1,392			1,392		
Wald chi-square	43.8			14.4			135.4			74.8			492.6			44.4		
p-value	0.000			0.002			0.034			0.000			0.114			0.001		
Wald Linear Restriction Tests	χ^2	$P>\chi^2$					χ^2	$P>\chi^2$					χ^2	$P>\chi^2$				
Economic characteristics =0	2.380	0.667					2.850	0.580					4.770	0.312				
Relational characteristics =0	21.960	0.000					15.800	0.003					14.040	0.007				
Convenience characteristics =0	9.080	0.011					8.620	0.013					4.370	0.112				

To assess whether the results are substantive in the sense of having something more than marginal economic impact, we examined the marginal effects of each of the criteria on the odds of choosing a small bank (Table 3-5). These marginal effects estimates were based on the estimates of criteria and factor scores after taking into account the effects of the control variables (Table 3-4, Model 4). Scanning the table by item suggests that a one-unit increase in the importance rating given to a given criterion would lead to small but non-trivial increases in the probability of choosing a small bank. For example, a one unit increase in the rating of *knows my business,* say from a 4 to a 5, would result in a 0.037 increase in the probability of choosing a small bank in 2001 and 1995.[8] A similar increase for *social contact with loan officer* would result in a 0.024 increase in the probability of choosing a small bank in 2001 and 0.032 increase in 1995. A one unit increase in *reliable credit source* would result in a 0.040 increase in the probability of choosing a small bank in 2001 and 0.038 increase in 1995. But a one unit increase in the importance of *location* would result in a 0.017 increase in the probability of choosing a *large* bank in 2001 (negative sign), and a 0.029 increase in 1995.

Interpretation of the magnitude in change at the factor level is trickier, but shows similar impact. Summing the marginal effects of the criteria included in each factor indicates that a one standard deviation increase in the **economic factor** would result in a 0.033 increase in the probability of choosing a small bank in 2001 and 0.071 in 1995; a similar one standard deviation increase in the **relational factor** would result in a larger 0.092 increase in the probability of choosing a small bank in 2001 and but a smaller 0.047

[8] We compute this marginal increase by multiplying the change in the independent variable – in this case "1" – times the product of **y** x (1-**y**), where y is the mean of the dependent variable, the proportion of owners reporting a small bank is their primary financial institution.

increase in 1995; and a one standard deviation increase in the **convenience factor** would result in a 0.087 increase in the probability of choosing a *large* bank in 2001, and a 0.046 increase in 1995.

Table 3-5. Marginal Effects of Importance Criteria

	2001 Survey			1995 Survey			1987 Survey		
	Coef.	Std Err		Coef.	Std Err		Coef.	Std Err	
Economic criteria									
Wants cheapest money	-0.022	0.012	*	0.008	0.010		-0.010	0.022	
Reliable credit source	0.040	0.013	***	0.038	0.013	***	-0.026	0.027	
Speedy decision	0.000	0.010		-0.019	0.012		-0.021	0.030	
Easy access to loan officer	0.015	0.018		0.044	0.015	***	0.046	0.029	
Relational criteria									
Knows my business	0.037	0.018	**	0.037	0.012	***	0.002	0.023	
Provides helpful advice	-0.001	0.011		-0.003	0.009		0.002	0.020	
Knows my industry	0.003	0.017		-0.041	0.009	***	0.100	0.028	***
Knows local market	0.029	0.013	**	0.022	0.012	*	0.012	0.020	
Social contact with loan officer	0.024	0.010	**	0.032	0.007	***			
Convenience criteria									
Location important	-0.043	0.017	***	-0.029	0.011	***	-0.026	0.020	
Wide range of services	-0.037	0.015	**	-0.017	0.013		-0.040	0.021	*

For Hypothesis 2, the null hypothesis was that the importance of the various relational criteria would have no effect on small firm bank choice over and above the effect of the other criteria. To evaluate H2, we used Wald linear restriction tests (reported in each panel at the bottom of Model 1) to evaluate the significance of the association between bank choice and any one criteria (e.g., those that are collected into the relationship factor) *over and above* the explanation of variance reflected by the other criteria in combination. For all three surveys, the relational criteria added very significantly (above the 0.001 level) to the explanation of variance, suggesting that for a significant proportion owners, relational considerations matter above and beyond cost and convenience in the decision

to choose a small bank. For the 1987 samples, convenience criteria also added marginally to the explanatory power of the model. For the 1995 and 2001 samples, the economic, relational and convenience clusters of criteria all added significantly to the explanation of variance, although economic was barely significant (at the 0.05 level) in 2001 and the sign for convenience was negative (favoring large banks). These results for the unconditional estimates (Model 1) also held when the control variables were added (Model 3). Overall, the combination of results provided support for Hypothesis 2: At any given point in time, the choice of smaller bank was associated with a preference for relational arrangements, over and above the impact of cost and convenience considerations.

For Hypothesis 3, the null hypothesis was that the association between bank choice and the economic, relationship and convenience factors would change from year to year; that is, that the relative importance of the criteria associated with bank choice would change from year to year. The results provided mixed support for Hypothesis 3. In 1987, only some relational criteria (and the relational factor) were significantly associated with the choice of a small bank. By 1995, economic and relational criteria were positively associated with the choice of a small bank, while one convenience criterion (but not the convenience factor) was associated with the choice of a *large* bank. And in 2001, at least some of each set of criteria, as well as all three factors, were significant in explaining bank size choice – with convenience associated with larger banks and the economic and relational factors with smaller banks. Taken together, these results support the contention that relational criteria were consistently important over time (at least to some proportion

of the population), but no support for the stability of the importance of economic or convenience criteria. That is, despite changes in bank and market structure, the impact of relational concerns remained relatively stable even as the roles of cost and convenience concerns changed.

Robustness Checks

We conducted three further tests to control for possible confounding influences of bank usage, bank availability and firm size. First, to account for the possibility that variations in the intensity of bank usage might affect the results, we added control variables for the outcome of the last loan try (*turndown*), whether or not the owner had a loan outstanding (*loan outstanding*) and bank usage (*number of banks used*). As seen in Table 3-4, Model 5, these variables had no effect on the pattern of significance or magnitude of the criteria coefficients. Of the three bank usage variables, only *turndown* was significantly – and negatively – associated with the choice of a small bank across all three surveys. This result suggests that those who were turned down for a loan tried a *larger* bank the next time they needed a loan (thus subjecting larger banks to adverse selection problems).[9]

Second, to control for the possible impact of limited bank choice in any given area, we added a set of variables designed to capture regional banking industry structure (*deposit concentration*) in geographical areas (*East, West*, etc). The results are also reported in Table 3-4, Model 5 and show that that the inclusion of this set of variables had no effect on the pattern of significance or magnitude of the coefficients relating to bank choice.

[9] This result should be interpreted with caution, as the underlying correlation is quite weak.

Thus, the association between a preference for relational governance and the choice of a small bank was not affected by market concentration in a region.

Third, to test whether firm size affected the choice of a small bank, we interacted the factors with size, to see whether size overwhelmed the effect of the factors. The results, reported in Table 3-4, Model 6 show that in 2001 and 1995 the relational factor had an effect that was independent of firm size. Only in 1987 did size have an impact on the relational factor, but the effect did not overwhelm the significance of the relational factor (e.g., for a firm with 10 FTEs, the net effect of the relational preference was still positive: 0.1936 – 10*0.0028 = 0.656). On the other hand, the economic factor was dominated by size in 2001 and 1987, with larger firms more likely to rate these factors as important than smaller firms. Convenience was a mixed bag, with only 1995 showing a "size" only effect. In short, the preference for relational criteria when choosing a bank appears to be independent of firm size, whereas larger firms are more likely than are smaller firms to make decisions based on economic factors.

Discussion and Conclusions

We used factor analysis and logistic regression to examine the relative importance of relational and economic criteria for small firm owners' choice of a primary bank. Our data included specific questions about both economic (cost and convenience) and relational preferences asked of samples of small business owners drawn from the same population of firms at three points in time: in 1987, 1995 and 2001. Our results show that small business owners considered both economic and relational factors in choosing a

primary bank; that owners with a preference for relational governance also preferred small banks; and that the association between the relational preference and the choice of a small bank remained relatively stable over time. Collectively, these results provide strong support for the notion that, at least for a proportion of the population, preferences for social arrangements such as relational governance are both important and durable factors in the making of seemingly straightforward business choices such as the choice of a primary bank.

The story for cost and convenience preferences is less clear. In the earlier samples, neither cost nor convenience were deemed important by firm owners when choosing a bank. Over time, both became significant but only convenience was associated with the choice of a large bank. The cost-driven economic factor was unexpectedly associated with the choice of a smaller bank, although the underlying criteria were mixed, with "reliable source of credit" and "easy access" associated with the choice of a smaller bank and "cost of money" with choice of a *larger* bank.

One possible explanation is that the changes in the importance of economic criteria reflect changes in economic, institutional and technological context. For example, in 1987, competition was limited, information technology was not a differentiating force in lending, and consolidation outside of the savings and loan industry was just beginning, resulting in muted differences between small and large banks. That is, before deregulation and subsequent consolidation, it seems likely that small firm owners perceived both larger and smaller banks as similarly convenient and cost-effective,

although those with strong preferences for relational governance would still have been drawn to smaller banks. However, as consolidation reduced the total number of smaller banks, owners who valued convenience might well have been driven to larger banks, especially when the larger banks offered competitive pricing. At the same time, as larger banks grew and the difference between large and small – and national and local – banks became more pronounced, small, personal banks would have become even more attractive to firm owners with a preference for relational governance. In short, it seems plausible that the instrumental calculus underlying economic decision-making changed as the economic, regulatory and technological context shifted, while the identity calculus underlying relational decision-making was less affected by these shifts. If this is so, one might expect the importance of relational preferences to shift as other environmental factors – such as culture and relational norms – change; this could be the subject of an interesting follow-up study.

It is interesting to note that even as the industry consolidated, some small banks survived and many were launched. For example, despite the overall decline in small bank market share, state banking regulators granted 1500 new charters between 1990 and 2007 (www.fdic.gov/hsob) – suggesting that investors continue to see business opportunities in starting new and by definition, small, banks (Cyree, Wansle, 2009). It seems plausible that both the persistence of some small banks and the launching of new small banks are related, at least in part, to the stable desire among a significant portion of business owners – as well as a significant portion of bank professionals (Marquis, Lounsbury, 2007) – for genuinely relationship-based banking.

This possibility has implications for entrepreneurial theory in that it suggests that social realities can shape entrepreneurial opportunities. Whereas many theories of entrepreneurship posit that opportunities arise because of discontinuous and unpredictable change in the underlying technological and economic infrastructure (Baumol, 1993, Schumpeter, 1950, Shane, Venkataraman, 2000), opportunities may also arise from shifts in social patterns – a possibility most clearly evident in the phenomenon of social entrepreneurship (Hill*, et al.*, 2010). In this case, the persistent preference for relational governance of banking exchanges may contribute to an ever renewing opportunity for new small banks, despite consolidation pressures.

This possibility also has policy implications. Our results suggest that in business-to-business dealings, relationships matter to at least some customers, and that these customers prefer small banks. To the extent that small banks are better at facilitating relationships and so serving this niche, and assuming that small banks can continue to offer credit and services at competitive costs, policy makers at both the state (where many new banks are chartered) and federal levels should ensure that new small bank charters continue to be encouraged (e.g. by not being overly restrictive on the demonstration of a "market need") and that regulations intended to deal with large bank problems do not suffocate small banks.

Our controls rule out three possible alternative explanations to the impact of relational, economic and convenience factors. First, it is conceivable that the results were driven by

adverse selection in that some small firm owners preferred small banks because these owners were, for some reason, unable to obtain financing from larger banks. This seems unlikely because there was little difference in the profiles (size of firm, age of firm, industry) of small firms that chose small banks and those that chose larger banks. Further, the firms that had recently been turned down for a loan were *less* likely to choose a small bank and *more* likely to choose a large bank – perhaps because large banks knew the owners less well and were less likely to know of any related, and possibly damning, context.

Second, it is possible that some firm owners were driven to choose small or large banks because of the industry structure of banking in their geographical area; for example, a firm in a small town might have had access only to a small bank, whereas a firm in an area that had experienced much bank consolidation might have had access only to large banks. Our controls for industry structure and location indicated no relationship between branch locations and bank choice, or between industry consolidation and bank choice. Despite consolidation, it seems possible to find small banks – or large ones – as preferred.

Third, it is possible that small firms ended up with small banks, either because owners of small firms enjoyed more attention as customers of small banks, or because competitive pressures made it difficult for small firms to receive services from large banks. Our controls for firm size and additional tests concerning firm size-factor interactions combine to suggest that smallness per se did not overwhelm the impact of an owner's

preference for relational over economic governance when selecting a bank, although the influence of preferences was somewhat diluted in the larger (albeit still small) firms. One possible explanation for the dilution of owner preference in the behavior of larger firms is that these firms were large enough that the bank choice decision was no longer made solely by the owner (the respondent to whose preferences we have access) but by a management team (or simply a non-owner manager), whose preferences might or might not align with those reported by the owners. This possibility highlights a methodological challenge in tracing the necessarily individual micro-foundations of organizational behavior. At the same time, it reinforces the theoretical notion that, to explain firm level decision making it is probably necessary to look at the dynamics of decision-making teams as they mediate between individual preferences and cognitions on the one hand, and organizational imperative and culture on the other.

Finally, while our results provide strong support for the stable influences of the relational preference in shaping some business owners' choice of a bank, it remains possible that small banks pick small firms and not vice-versa. We think this possibility is unlikely because, anecdotally, both large and small banks seem to compete for the small firms' business, leaving the small firm to choose the bank that best meets its needs. More importantly, by looking at preferences rather than behavior or creditworthiness, we were able to tease out a condition that should, for independent agents, *precede* negotiations between the owner and the bank. Finally, we partially controlled for firm behavior and creditworthiness, with measures such as *turndown* and firm size and age. Still, truly longitudinal panel data would be required to confirm the direction of causality. Such a

study could also provide insight into how, when and possibly why (deregulation? changes in credit conditions? entrance or exit of various kinds of banks?) the relative prominence of relational, cost and convenience preferences ebb and flow.

At a more philosophical level, while this study suggests that some owners are more inclined to organize business through relational arrangements than are others, it is possible that these preferences exist as competing, or even complementary, tendencies within each of us – tendencies rooted in fundamental motivations involving goal seeking through identity and goal seeking through instrumental self interest. If so, there would be both scholarly and managerial value in tracing the interplay between motivations as well as the conditions that favor one motivation over another – within actors (as they are embedded in groups and organizations), within populations, and over time. Indeed, the possibility that human actors are motivated as much by the longing to belong as the pursuit of instrumental advantage has broad implications for all of our theories about the organization of economic activity.

CHAPTER 4

GUILDS & ORGANIZATIONAL CHANGE: CONTESTED LOGICS IN THE MANAGEMENT OF INNOVATION AT ROHM AND HAAS

Abstract

As innovation becomes more critical to strategic success, scholars have shown increasing interest in understanding the *processes* that underlie organization for innovation, and especially how change can be engendered endogenously. We combine institutional logics, narrative, social movements and process theories of organization to interpret the history of the management of Rohm and Haas Company's research and development function as the firm struggled, both successfully and unsuccessfully, to generate and maintain innovation during a century of scientific, competitive and institutional evolution. The story that emerged highlights the collective, contested nature of the process of organization; suggests a mechanism for endogenous, dialectical change that helps to resolve the paradox of embedded agency; and provides insight into the subterranean tensions – especially between professional guilds – that animate organizational change.

Keywords: identity / organization theory / institutional logics / innovation management / Rohm and Haas Company / chemical industry

Introduction: The Process of Organizing for Innovation

Innovation is the lifeblood of many firms and industries, especially those built on maturing technologies or locked into innovation races (Chandler, 2005, Dunlap-Hinkler, Kotabe, Mudambi, 2010, O'Connor, Price, 2001). Central to the challenge of effective innovation is the problem of organization, especially in the face of continuous, sometimes radical, change in economic, competitive and technological contexts (Chandler, 1962, Zajac, Kraatz, Bresser, 2000). While there is growing interest in how firms might be designed to support both incremental and radical innovation (Andriopoulus, Lewis, 2009, Christensen, Raynor, 2003, Dougherty, 2008, O'Connor, DeMartino, 2006, Tushman*, et*

al., 2010), often through ambidextrous organization enabling both exploration and exploitation (Mudambi, Swift, forthcoming, Tushman, O'Reilly, 1996), there remains ample evidence that most firms stumble when faced with radical technological challenges (Christensen, 1997, Henderson, Clark, 1990, Hill, Rothaermel, 2003).

Firms struggle to manage innovation and concomitant organizational change because the fundamental direction and organization of firms are so difficult to alter. To the extent that strategic success depends on achieving internal fit between strategy and structure and external fit between strategy and context (Argyres, Bigelow, 2007, Miles*, et al.*, 1978, Porter, 1985, Siggelkow, 2001), change is obstructed. This is because the very articulation of strategic fit results in system stability, resistance to change and inertia (Gresov*, et al.*, 1993, Sydow*, et al.*, 2009). More generally, whether or not fit is achieved, organizations seem to settle into strategic paths conditioned by the imprint of the founder and wedded to a path through self-reinforcing mechanisms such as the translation of learning and innovation into routines (Nelson, Winter, 1982); resource commitments (Ghemawat, 1991, Hill, Rothaermel, 2003); contractual arrangements (Nickerson, Silverman, 2003); cognitive and psychological investment (Audia, Locke, Smith, 2000); mental maps (Siggelkow, 2001); organizational culture (Sorensen, 2002); organizational identity (Tripsas, 2009); and social commitments to employees and communities (van Driel, Devos, 2007). Further, the range of possible choices about technology and organization are constrained by the technological paths (Garud, Karnoe, 2003) and institutional logics (Aldrich, Fiol, 1994, Thornton, 2004) in which actors are embedded.

The organizational change literature suggests that shifting onto new paths requires both external shocks (Romanelli, Tushman, 1994) and leaders who are sufficiently self-reflective, influential and powerful to declare a crisis and articulate and execute a new direction with wholesale changes in strategy, structure, incentives and culture (Rosenbloom, 2000, Siggelkow, 2001, Sydow*, et al.*, 2009). While well accepted, this narrative of change begs the question of "embedded agency" (Greenwood, Suddaby, 2006, Seo, Creed, 2002). That is, the conventional change narrative does not explain how actors – notably managers from within the firm, but even including "outsiders" from the same industry – perceive, much less change, the group, organizational, technological or institutional contexts that shape them (Holm, 1995). There is, in short, a lack of clarity about the internal *processes* through which embedded actors generate and advocate for changes in organizational and field level structures (Garud*, et al.*, forthcoming, Lounsbury, Crumley, 2007).

Our interest in the change process and the problem of embedded agency is informed by process theories of organization. Process theories of organization seek to explain *how* organizational change and organization itself are articulated, embroidered and transformed over time (Sydow*, et al.*, 2009, Van de Ven, Poole, 2005). Process theories of organization define organization (not just organizational change) as "an attempt to order the intrinsic flux of human action, to channel it towards certain ends, to give it a particular shape, through generalizing and institutionalizing particular meanings and rules" (Tsoukas, Chia, 2002: 570). Seen through this organization-as-process lens, organization and change are one improvisational process of continual variation,

improvisation and adjustment (Orlikowski, 1996) in which even seemingly stable routines become "flows of connected ideas, action and outcomes" performed, and varied, by interacting individuals (Feldman, 2000, Feldman, Pentland, 2003: 613).

Critically, these flows of ideas, actions and outcomes are shaped by institutional logics, those "broad cultural beliefs and rules that structure cognition and fundamentally shape decision making and action in a field" (Marquis, Lounsbury, 2007: 799). While commonly described at the level of the organizational field (Thornton, 2004, Thornton, Ocasio, 1999), the concept of logics has also been applied effectively to boundary-spanning communities of practice such as social movement networks (Lounsbury, 2001) and professions (Greenwood, Suddaby, 2006), as well as (using different terminology) to the "thought worlds" of departments. The logics of professional guilds (Mudambi, Swift, 2009) and other identity-based communities of practice emerge from a process of acculturation into shared value systems, boundary markers, exemplary practices, cognitive maps and relationships (Brown, Duguid, 2001, Kuhn, 1970). In identity groups, the process of acculturation is driven by a fundamental longing to belong in which individuals "try on" identities until finding an identity that brings self-perception and behavior in line with salient group exemplars – exemplars that are themselves shaped by the collective search for a identity (Bartel, 2001, Hogg, Terry, 2000). Evident at both field and identity group levels of analysis, the concept of logics provide a conceptual bridge across the levels of institution, organization, identity group, and individual: How actors perceive, think and act is shaped by the logics of the nested groups, organizations and institutions in which these actors are embedded (Dutton, Dukerich, 1991).

These layers of logics at once shape and are subtly elaborated and varied in the stories actors tell. As with many human activities, organization seems to be performed, experienced and recounted as evolving narratives: The stories humans tell ourselves and each other are central to articulating, negotiating and reconciling interests, identities and roles in an organization (Boje, 1991, Boje, 1995, Hardy*, et al.*, 2005). Indeed, the stories we tell seem to be central to our personal identities (and the identities we ascribe to others) (Creed*, et al.*, 2002, Hogg, Terry, 2000) and perhaps even the experience of consciousness itself (Crites, 1971). As storytelling actors within organizations, humans create organizational coherence by telling and trying out contending stories until a dominant story emerges and is reinforced by structures, rewards and power structures, all controlled by the now dominant elite (Greenwood, Suddaby, 2006, Maguire, Hardy, 2006, Phillips*, et al.*, 2004). But while organization coalesces around a dominant story, organizations always contain additional stories, each told by identity groups with their own interests and logics and ambition to shape organizational reality (Boje*, et al.*, 2004, Dawson, Buchanan, 2005). That is, for every dominant organizing story and elite group, there are other stories and identity groups with their own distinctive logics and their own desire to organize through and around their narratives of what is valuable and real. Thus, the process of organization can be seen as a multi-vocal contest between narratives anchored in identity groups guided by their own distinctive logics (Buchanan, Dawson, 2007).

To learn more about the internal processes of organization, especially in service of innovation, we undertook a historical study of Rohm and Haas Company's management of research and development, focusing in particular on the stories actors told about the management of innovation. We used a historical, single case study design because it is an appropriate means to develop theoretical insight into processes, mechanisms and change over time (Eisenhardt, Graebner, 2007, Yin, 1994). The Rohm and Hass Company provided a suitable setting because of its long history of dependence on and self-conscious management of innovation to succeed as a specialty chemical firm supplied by, competing with, and selling to much larger firms (Chandler, 2005, MacPhee, 2008). During its 100-year history, Rohm and Haas Company bought in and refined path-initiating technologies such as synthetic tanning, synthetic resins and acrylics. It initiated break-through, path-initiating innovations such as acrylic emulsions, surfactants and agricultural chemicals. And it both failed (pharmaceuticals) and succeeded (electronic materials) in shifting onto entirely new technological paths. Further, both the history and internal struggles of Rohm and Haas were reasonably well documented, providing glimpses of the internal processes involved in the management of innovation. In short, story of R&D at Rohm and Haas provided the kind of rich story – or set of stories – that supports the development of theory (Pentland, 1999) – in this case about the organization of innovation.

The theory story that emerged from our analysis highlights the contested, multi-vocal nature of the process of organization; provides insight into the subterranean tensions between professions that animate organization; and suggests a mechanism of negotiated

endogenous change that helps to resolve the paradox of embedded agency. In the sections that follow, we describe our methodological approach; trace the evolution of three chapters of organization of Rohm and Haas Company's R&D function; combine these findings with extant theory to propose a refinement of a dialectical theory of negotiated change in organizational structures; and conclude with implications for theory, research and application.

Method

We employed a detailed historical case study design to explore how embedded agency functions in organizational arrangements. Our use of a longitudinal single case study is fitting for several reasons. First, we were interested in the process through which firms organize and change structures (the "how" of organization), and such historical processes are best teased out through inductive techniques (Eisenhardt, Graebner, 2007, Van de Ven, Poole, 1995). Second, our research question required examination of "situated human agency unfolding in time" (Tsoukas, Chia, 2002: 572) that can be more easily observed in a single case history. That is, because the changes we studied were set in a complex social and organizational setting in which causal dynamics and motivations were not obvious, a single case study narrative provided a means to move below surface details to the underlying forces shaping the process (Pentland, 1999, Weick, 1995). Third, we used a single case because our goal was to extend extant theory by drawing on the rich details of a case to fill in gaps and to illustrate proposed elaborations (Siggelkow, 2007). That is, we sought to generalize from example to theory, rather than from a sample to population, in the hopes of refining the theory (Eisenhardt, 1989, Yin, 1994).

Case Selection & Data Sources

We chose the Rohm and Haas Company as our "strategic research site" because it "exhibits the phenomena to be explained or interpreted to such advantage and in such accessible form that [it] enable[s] the fruitful investigation of previously stubborn problems" (Merton, 1987: 1-2). First, as an exemplar of the science-driven specialty chemical firm (Chandler, 2005), Rohm and Haas's 100-year trajectory closely tracked the evolution of the chemical industry while providing an object lesson in the mostly effective management of technological and industry change. Second, the management of innovation within Rohm and Haas was closely tied to the company's successes and failures as a specialty chemical company, with success being achieved when Rohm and Haas was able to "…redefine its strategic boundaries within the limits of its technical and functional capabilities" (Chandler, 2005: 94); thus, our study promised efficient insight into this strategically central function. Finally, the management of innovation at Rohm and Haas promised to be a particularly rich setting to study the interaction between identity groups because it involved endless discussion and coordination between scientists and MBA-trained managers.

Practically, as a prominent firm in the relatively modest Philadelphia economy, Rohm and Haas Company's history and personalities were well documented, affording ready access to the data we needed. For this study, we combined three sources of data: published histories; archival secondary material, especially annual reports and news articles; and interviews, including published oral histories. The histories were anchored

by a scholarly monograph about Rohm and Haas, compiled by a professional historian and published by a university press on the occasion of the Rohm and Haas Company's 75th anniversary (Hochheiser, 1986). This core text was complemented and updated by Alfred D. Chandler Jr.'s history of the chemical industry (Chandler, 2005), including a section on Rohm and Haas, and by several articles tracing the history of specific core chemistries – such as acrylic emulsions. Together, these sources provided a reasonably complete story of the Rohm and Haas Company from its founding in 1907, through its early successes and struggles; its growth through WWII and beyond into a multinational firm; and its transition from family to fully professional management. To round out our understanding of company performance and industry context in more recent years, we turned to annual reports and trade and local news reports from 1985-2008.

For further insight into leadership and change dynamics since the 1970s transition from family to professional control, we drew on Chemical Heritage Foundation oral history interviews with Rohm and Haas CEOs Vincent Gregory and J. Lawrence Wilson and on interviews conducted by the authors with senior scientists and executives. Our selection of interviewees was purposeful, in that we chose senior figures with intimate knowledge of the evolution of R&D at both corporate and divisional levels – including the Chief Technology Officer, senior scientists, division heads, and the corporate VP of Strategy. Our questions were exploratory, guided both by theoretically informed themes and the actual flow of the interview discussion. The interviews lasted from one to three hours; were conducted in pairs, with a third present to take notes; and, with one exception, were conducted in person. Immediately after each interview, we wrote up our notes

independently, then compared and combined notes into a common narrative, and finally returned the combined narrative to the interviewees for correction and elaboration.

Data Analysis & Theory Development

Our analysis was intentionally exploratory and informed by "a head full of theories" (Weick, 2007: 16) about decision making, innovation management, and organization for innovation. Because of our interest in process theory and agency, we applied narrative analysis (Pentland, 1999) to understand how actors framed, interpreted and generally made sense of their experience (Weick, 1995). We did this, however, with special attention to the larger economic, social and cultural contexts in which our protagonists acted and told their stories; our goal was to take what has been called an ethnonarrative approach that includes multiple narratives and features particularly rich description of the case and its context (Hansen, 2006).

We started our analysis by reading and re-reading various historical documents, comparing notes, and writing a condensed chronological narrative of the evolution of the firm and its R&D function within a larger context of industry growth and technological change. Alongside the narrative, we developed a technology innovation timeline (see Figure 4-2, below) to illustrate the evolution of innovation at Rohm and Haas. Together, the narrative and timeline allowed us to identify specific chapters of organization that, in turn, facilitated comparison between the bracketed periods and examination of how each chapter evolved from the previous one (Langley, 1999).

Having constructed a three-chapter trajectory of growth and organization, we revisited those portions of the source material that addressed the organizational dynamics during the two intense periods of transition between chapters. Because of our interest in the processes that drive organization, we paid special attention to the stories told about these periods of change by various actors. We triangulated the interviews and oral histories with our reading of the published histories and other archival sources. While doing so, we generated a set of telling quotations from both histories and interviews to be used for further analysis. We concluded this portion of the analysis by developing composite narratives that sketched the processes of change from chapter to chapter and highlighted the tensions that seemed to feed those processes.

Finally, to develop theory to organize and explain the dynamics we observed, we moved iteratively between theory and Rohm and Haas data, proposing and trying out various models (Miles, Huberman, 1994). After several iterations, we honed in on the dialectical theories of organization sketched by Seo & Creed (2002) and Hargrave and Van de Ven (2006) and were able to make the leap to a coherent theory story (Langley, 1999, Weick, 1989) that amended and extended extant theory by adding Rohm and Haas-based insights about the role of tensions between professional guilds in animating and shaping the process of organization.

The Evolution of the Organizational Structure of R&D at Rohm and Haas

The evolution of the management of R&D at the Rohm and Haas Company was shaped by immense pressure to devise a fit between the technological environment,

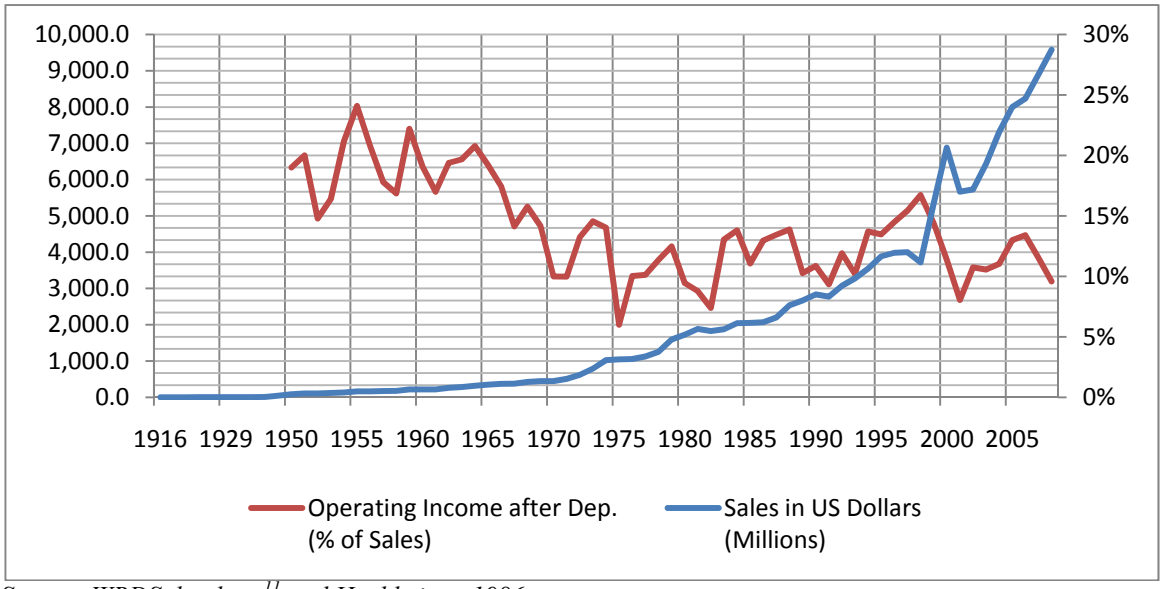
the scientific capability required, and the organizational structure used to manage the scientific work. Our emphasis was on the ways in which the R&D function responded to the pressures for fit. In particular, we sought to identify the processes and motivations at work during shifts in organizational structure in response to changing configurations of external pressures. Our narrative is organized into three sections: A brief history of Rohm and Haas that suggests three chapters of organization and two periods of transition; further description of the technology paths that, in part, defined these chapters and transitions; and a more in-depth exploration of the organizational processes at work during the two transitions.

Rohm and Haas: 1909-2009[10]

The Rohm and Haas Company was founded in Darmstadt, Germany in 1907 and in Philadelphia, USA by 1909 as a partnership between Otto Rohm, a gifted chemist, and Otto Haas, a technically savvy salesman and entrepreneur. In response to concerns about patriotism in WWI, Rohm and Haas became a public, US-registered firm in 1917 – although the Haas family retained a large measure of control until the company was sold to Dow Chemicals in 2009. Over the years, Rohm and Haas compiled an enviable record as one of the more successful US-based specialty chemical firms (Chandler, 2005) (See Figure 4-1).

[10] The backbone of this brief history is drawn from Hochheiser's fine history 1986. *Rohm and Haas: History of a chemical company.* University of Pennsylvania Press: Philadelphia, augmented by summaries provided by Gale Research and in Chandler J, Alfred D. 2005. *Shaping the industrial century: The remarkable story of the evolution of the modern chemical and pharmaceutical industries.* Harvard University Press: Cambridge, MA. Further details come from interviews and various articles, as cited.

Figure 4-1. Rohm and Haas Sales and Operating Profit, 1916-2008



Source: WRDS database[11] and Hochheiser, 1986.

Despite a few difficult periods, notably the Great Depression, sales grew steadily, from US$800,000 in 1916 to nearly US$9.6 billion in 2008. As for many firms, sales took off during World War II, accelerating on the strength of war demand for Plexiglass, from under $6 million in sales in 1938 to US$43 million in sales by 1944 and US$83 million by the end of the war. Operating profits[12] were healthy through the 1950s only to show a steady decline from 1960 through 1975 as Rohm and Haas struggled with succession, competition, the erosion of its various technical advantages, the 1970s oil shock, and increasing regulation (Chandler, 2005, Hoffman, Ocasio, 2001, Wilson, 1999). Margins stabilized at a lower level through the 1980s until growing again in the 1990s as new technologies, especially in electronic materials, started to drive profitability (Wilson,

[11] Wharton Research Data Services (WRDS) was used in preparing this table. This service and the data available thereon constitute valuable intellectual property and trade secrets of WRDS and/or its third-party suppliers.

[12] Operating profits, after accounting for depreciation, are available from 1950 onwards; earlier data is spotty and is usually reported as net profit.

1999); the decline in margins after 2000 reflected both poor performance on acquisitions (outside of electronic materials) (Wood, Hunter, 2003) and a shift in profit structure after Rohm and Haas purchased Morton Salt and so inherited a relatively large proportion of low-margin sales.

Until its founder retired in 1960, literally on the eve of his death, Rohm and Haas was dominated by his personality and management style. Some of Mr. Haas' key attributes were reliance on science and scientists, attention to technical sales, insistence on quality, careful control of costs and capital, avoidance of debt, wariness of the government, and loyalty to his employees (Gregory, 1995). Above all, Mr. Haas was a firm believer in centralized, personal control: Well into the 1930s, he read every piece of incoming mail before routing it to the appropriate recipient (Hochheiser, 1986: 123). Further, while he regularly reorganized the formal organizational structure, Mr. Haas placed his trust in individuals not roles, frequently bypassed official channels, and made all critical decisions himself (Gregory, 1995).[13]

It was up to Mr. Haas's son and successor, F. Otto Haas, to define job roles such that the "corporate secretary lost his responsibility for developing flammability tests" (Hochheiser, 1986: 131) and a truly divisional organizational structure emerged. While professionalizing the firm, F. Otto Haas also presided over initial attempts to diversify

[13] "The departmentalized organizational structure Haas set up in 1943 was then typical of companies of Rohm and Haas's size. But to a large extent it existed only on paper at Rohm and Haas. More of the routine and semi-routine decisions were being made elsewhere, but Haas himself continued to provide overall direction and planning and, to the extent allowed, continued to watch even the routine details. The new executives referred to Haas decisions that in most other companies they would have been expected to make themselves." (Hochheiser, 1986: 68)

away from the original core chemistries both by purchasing firms in textiles and (veterinary) pharmaceuticals and by building a research campus in suburban Philadelphia to foster break-through innovation.

After a decade, F. Otto Haas stepped aside in 1970 and appointed Vincent Gregory, the first non-scientist (and an MBA at that!) to rise to prominence within the firm (Gregory, 1995, Hochheiser, 1986). Gregory had built his reputation managing the European operations of Rohm and Haas, driving growth and profits through efficiencies, not invention. Much to the shock of the science-led home office, Gregory brought this same efficiency philosophy to the company at large, insisting on quantitative business cases for new strategic initiatives, implementing return on net assets as a central metric, reducing the workforce by 10% (an unheard of event), and setting off a long-term, intense struggle between the science and "marketing" (MBA) professional guilds within the firm. Gregory also formalized and modernized the corporate structure, designing Rohm and Haas as a multinational with a matrix structure.

Gregory was followed as CEO by J. Lawrence Wilson, another MBA with international experience, who continued to rationalize the business, promote financial-analysis-led management decision-making, and consolidate the firm as a global company (Wilson, 1999). While Gregory (often with Wilson's help) had divested non-core and under performing divisions, Wilson launched a tremendous wave of acquisitions (more than 40 in five years) that would be continued by his successor, Rajiv L. Gupta, and end only when Rohm and Haas was itself purchased by Dow Chemical.

Both the divestitures and the acquisitions were driven by an increasingly frenzied search for scale and "the next big thing" in a rapidly maturing, consolidating industry in which specialty chemical firms were caught in a value squeeze between the demands of increasingly large customers and suppliers (D'Alessandro, Baveja, 2000, Wilson, 1999, Wood, Hunter, 2003). While most of the acquisitions did not generate the hoped-for margins, Rohm and Haas was able to combine several acquisitions into a promising new line of high-margin, electronic materials products based on scientific work done at the intersection between chemistry and physics (Hochheiser, 1986). As one of the few specialty chemical firms with a new technological path opening and so a rosy future (Chandler, 2005), Rohm and Haas commanded a tremendous premium when the family urged a sale after 100 years in business: "An exuberant Dow Chemical chief executive Andrew N. Liveris said he paid a 'full price' for Rohm & Haas because he considered it 'beachfront property' and a 'jewel' ..." (Fernandez, DiStefano, Panaritis, 2008: A1).

In many ways, the trajectory of Rohm and Haas mirrored the trajectory of the chemical industry: Launched by inventions that standardized and industrialized craft processes; goosed along by WWII and post-war consumer and industrial demand; and profitable to the extent that the firm could race along specific technological paths, turning learning, scope and scale advantages into profits (Chandler, 1992, Chandler, 2005). Rohm and Haas stood out from its peers because of its tight, family-dominated culture; its unusually effective, research-driven development of its technological paths; and its successful opening of new paths at critical moments in the evolution of the surrounding chemical

industry. The following section highlights the technological paths on which Rohm and Haas was built.

Technological Pathways to Success

Rohm and Haas was built around a two big ideas – one scientific and one commercial. The scientific idea, which emerged in Germany at the turn of the century, was that the science of chemistry could be utilized to replace somewhat idiosyncratic chemicals derived from organic sources with synthetic compounds with uniform characteristics that enabled production on an industrial scale (Chandler, 1990, Chandler, 2005). "[Haas] hoped American varnish manufacturers would embrace Albertols for the same reasons that tanners had adopted Oropon. Albertols were standardized, innovative products which could replace variable, natural ones" (Hochheiser, 1986: 42).

The commercial insight was that technically sophisticated sales people, supported by scientists and investment in R&D, could generate sales with high margins by working closely with industrial customers to solve specific problems. From the beginning, and with only a few false moves, Rohm and Haas competed on technical superiority and fit with industrial customer's needs rather than price (Gregory, 1995, Hochheiser, 1986, Wilson, 1999).

Figure 4-2. The Evolution of Rohm and Haas Product Lines

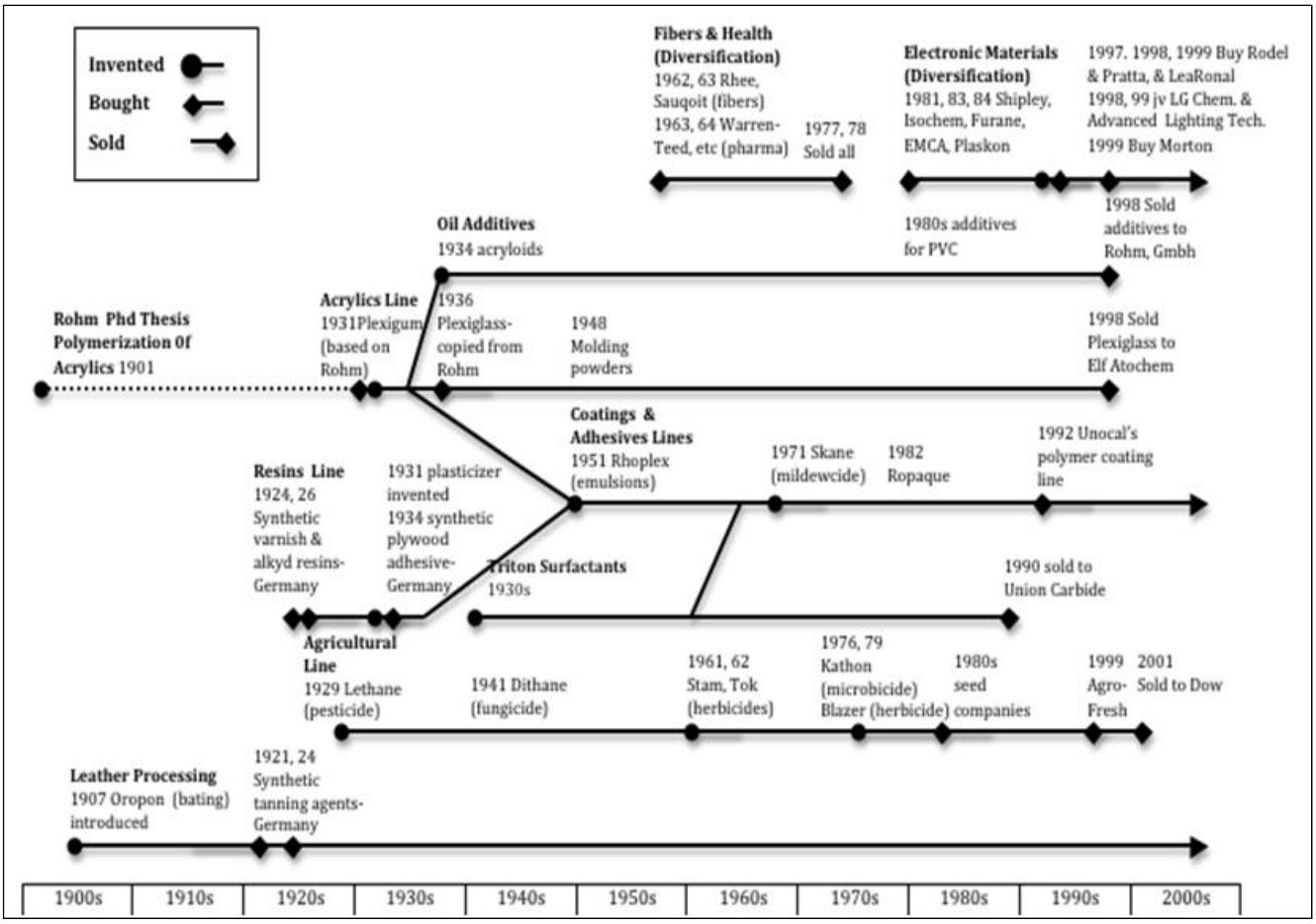


Figure 4-2 traces, in simplified form, the origin and evolution of the technologies on which Rohm and Haas was built. Although Rohm's 1901 dissertation on acrylic chemistry would eventually serve Rohm and Haas well, the company's initial products were tanning chemicals, starting with a Rohm-invented bating compound that replaced the soup of dog excrement that was in common use at the time. The leather processing line was augmented in the 1920s and early 1930s by the resin, agricultural, surfactant and acrylics lines. Each of these lines, except agricultural, was built on technology bought from German and then further developed in-house, thus building pathways of learning, scale and scope. Whenever Rohm and Haas tried to launch new technologies that were

not on its existing pathways – e,g., fibers (DuPont's area) and health (dominated by pharmaceutical firms), it failed. Indeed, it wasn't until the 1980s formation of the electronic materials group that Rohm and Haas was able to diverge substantially from the paths it first trod in the 1920s and 30s. That is, like many of its peers, Rohm and Haas's success depended on its dominance of a handful of chemistries – and its failures were often linked with forays off its own paths and into other firms' areas of expertise.

Despite the company's well-deserved reputation as a science-driven firm, despite its long history of incremental innovation in products and processes, and despite company lore about the importance of breakthrough innovation (Brown, 2008), it is notable how few breakthrough innovations were developed in house. Even Rohm and Haas's most famous product, Plexiglass, was co-developed with Rohm's operations in Germany, while some of the foundational chemistry for its water-based polymers came from BASF in Germany (Gregory, 1995). Of all the primary technological lines, only agricultural chemicals were built on a Rohm and Haas breakthrough – the discovery and development of Lethane, the first commercial synthetic organic insecticide (Hochheiser, 1986: 35).

Of course, Rohm and Haas scientists generated many new formulations, products and processes, both to serve customers needs and to improve process efficiencies. Also, while most scientists were assigned to solve customer problems and rewarded by the opportunity to sell, a few scientists were cultivated as complements to the German network of new ideas, especially as the world wars and Rohm's illness interrupted the flow of inventions from Germany. The most promising of these star scientists, notably

Herman Bruson, were given great latitude to follow their interests, generate patents, and move on to the next problem – leaving the increasingly formidable development-and-sales apparatus to commercialize what they could (Hochheiser, 1986: 69). Still, for decades, the company's R&D *modus operandi* was to buy in innovation and to devote company scientific resources to the elaboration and customization of these innovations.

Both the success and failure of various lines illustrated the central role of path-dependent learning in the success of chemical firms (Chandler, 2005). First, Rohm and Haas built its success in a very few areas of expertise – most importantly a deep knowledge of acrylics – that allowed it to identify promising innovations, often years ahead of market demand;[14] refine products and processes; stay ahead of competitors; and protect its margins against commoditization (Chandler, 1990, Chandler, 1992, Chandler, 2005, Lauzon, 2008). This deep knowledge in a relatively few areas made Rohm and Haas the quintessential *specialty* chemical company. Second, with the notable exception of electronic materials, when Rohm and Haas strayed from its core knowledge areas – such as its ill-fated attempts to diversify into textiles and (veterinary) pharmaceuticals – it faltered, losing money and focus as it struggled to evaluate new technologies and to match them to new customers with unfamiliar needs (Chandler, 2005, Gregory, 1995, Hochheiser, 1986).

Third, Rohm and Haas's technical strengths – and especially its reliance on a handful innovations from the 1920s through 1940s, led to its most enduring challenge:

[14] For example, Rohm and Haas scientists developed Rhoplex AC-33, the central component of acrylic paints, in 1953, but had to champion and refine it for twenty years until acrylic paints became the market leaders

Discovering new sources of growth. The search for breakthrough innovations was a constant theme in both lore and strategy, even as the company's very structure evolved to milk the most from incremental innovation rather than to generate radical innovation. Further, CEO after CEO tried to invent, acquire or otherwise shift Rohm and Haas onto know technological paths, especially as the industry matured and both suppliers and customers grew in scale, relative to Rohm and Haas. In the end, the persistent search for a new pathway paid off in the form of an emerging expertise in electronic materials – but success was realized only when the Electronic Materials group adopted a new style and form of organization (MacPhee, 2008, Paik, 2008).

While the history of Rohm and Haas can be read as a testament to the power of path dependency, Rohm and Haas did shift trajectories at least twice: when it shifted, around WWII, from collecting technologies to milking a few lines, and when, in the 1980s, it was able to move one part of the organization onto a new path featuring electronic materials. Critically, these shifts involved significant change in organization and culture. In the next session, we turn our attention to the organization of R&D and describe three chapters of organization separated by two periods of transition.

Organizing for Innovation: Three Chapters in the Organization of R&D

Over the years, Rohm and Haas took three organizational approaches, more or less sequentially, to managing innovation. We label these approaches "buy and apply," "develop and sell," and "focus and race." In this section, we describe these approaches

and hone in on the transition from one to the next. Table 4-1 features selected quotations that describe various aspects of each chapter of organization of R&D.

Buy & Apply – Founding through the 1950s. When Rohm and Haas was launched on the industrial promise of the new synthetic chemistry, its R&D challenges were two: Finding innovations that might have commercial use and convincing skeptical business owners that the newfangled chemicals would work better than the time-worn processes they were meant to replace. At that time, Germany the was acknowledged leader in the industrial application of chemistry, with large manufacturing plants, the first industrial laboratories and close connections between industry and academia (Chandler, 2005). Otto Haas solved his sourcing problem by tapping his strong personal network in Germany to find and license a variety of technologies; he also sent his most promising scientists to Germany to learn from the masters (Hochheiser, 1986: 49, 60). But having access to innovative chemistry was not enough because each new chemical required endless tinkering to produce products that worked and were affordable. Haas thus developed a pattern of asking promising scientists to solve problems for customers and then sending them out into the field to convince new customers that their solutions were valuable; for example, after sending Donald Frederick to Germany to learn how to make Plexiglass, Haas promoted him to become the first VP of Sales in the expanding company (Hochheiser, 1986: 12, 67). In short order, scientists ruled the company, dominating sales and operations as well as research.

Table 4-1. Stories about Organization and Change in R&D Management

Buy & Apply Chapter of Organization	
Hochheiser, 1986: 68	The departmentalized organizational structure Haas set up in 1943 was then typical of companies of Rohm and Haas's size. But to a large extent it existed only on paper at Rohm and Haas. More of the routine and semi-routine decisions were being made elsewhere, but Haas himself continued to provide overall direction and planning and, to the extent allowed, continued to watch even the routine details. The new executives referred to Haas decisions that in most other companies they would have been expected to make themselves.
Hochheiser, 1986: 123	[Mr. Haas] wanted to know everything going on all over his company. Well into the 1930s (at which time the volume got too large) he read every piece of incoming mail before it went to the appropriate individual and checked every bill before it was paid. When he wanted to speak to somebody, regardless of where that person was in the corporate hierarchy, he spoke to him, and not necessarily on the subject that was officially the employee's responsibility. Donald Murphy was head of Agricultural and Sanitary Chemicals and Foreign Operations, but Haas was as likely to seek his opinion on leather chemicals as on anything else.
Hochheiser, 1986: 205	The company's evolution was hardly the result of organizational size and financial resources alone. New science and new technology were primary factors in shaping its development. Otto Haas's own position astride the two cultures of his native add adopted lands provided an important ingredient in his company's success. It placed Rohm and Haas in a favorable position, which Haas ably exploited, as a conduit for the transfer of German chemical technology to the United States.
Hochheiser, 1986: 122	Not only did Haas develop his method of selling with Oropon [tanning chemical], he developed a type of product as well. Oropon came from the cutting edge o science, but it was not a finished product to be sold at retail on its own account. It was a specialty to be sold to a group of manufacturers on the basis of its superior properties for use in the production of their products.
Gregory, 1995	"He was a tough old bird. He really was tough, but very intelligent…I mean, we'd have lunch. It would be all the senior people of the company…who, outside his office…were gods in their own right. But with Mr. Haas, they were little boys. Nobody contradicted him. He told them what."
Develop & Sell Chapter of Organization	
Hochheiser, 1986: 131	[F. Otto Haas] perceived that the highly centralized, informal style to which is father had clung wound not work for him, nor for the Rohm and Haas of the 1960s…He chose to delegate authority to the firm's most able managers and executives, and to reach major decisions by consensus. Delegation of authority required clearly defined job descriptions, and executives began to find their job titles corresponded more closely with what they were being asked to do.
Hochheiser, 1986: 199	The first finding of the company's 1975 Organization Study Group Report was that the existing business planning process was "defective" and inflexible. It cited a "lack of clearly stated business strategies based upon comprehensive market research," …. A new Management Committee, consisting of Gregory and a handful of key executives, would have responsibility for reviewing and approving long-range plans.

Table 4-1. continued

Hochheiser, 1986: 201	Gregory also appealed to Haas because of qualifications whieh he brought to the job and which Haas himself lacked. Gegory was a professionally trained manager, with a bachelor of arts degree in economics from Princeton and a master's degree in business administration from Harvard. Gegory's elevation was the culmination of the transformation of Rohm and Haas from a family-owned and –operated business to a professionally managed corporation…
Gregory, 1995	"…I had made almost a mission out of the fact that you can't do research in a cocoon out there in Spring House [central research laboratory], any more than you can ask the marketing people just to sell whatever you make. You need a marriage between marriage and research. They all believed in this, except that there was too much pride at the top in some cases, and I broke that down."
Gregory, 1995	"There was some bitterness in the research division because [staff reduction] was handled badly there, the guy in charge said, 'If Gregory wants ten percent [cuts], we're going to give him fifteen percent.'"
Gregory, 1995	"We came to the conclusion – I came to the conclusion and so did some others – that, 'You know, market share isn't enough. There's got to be return on investment. We've go to have our people involved in this business, so that they're out growing them like they're their own business – so they're not just spending company money,' and so forth. That's when we adopted RONA. It was more than just a formula for return on net assets. It was a philosophy of doing business."
Brown, 2008	"Both Haas leaders had a chemistry degree and really understood the science, as did all the executives and sales people. [Then], Gregory, a Harvard MBA, took over and began hiring consultants to reorganize the company. They emphasized attention to customers and their needs – which led to lots of incremental improvements but less invention. The company became dominated by marketing types, and increasingly top management and sales people did not understand the underlying science."
Retired, 2007	"Officially, exploratory R&D projects had perhaps a four-year timeline. After two years, maybe the markets had changed, or the competition got a leg up on us. At that point, the project would be deemed unsuccessful and would be eliminated. But technologies, and projects, were seldom completely killed, Of the technology and some of the people would find a new home in a business unit. Or the project would be scaled way back but kept alive by a small group of scientists."
Fernandez, 2008	"In the past ten years, we have not developed a killer new product. Rohm and Haas had a tradition of breakthrough innovations every three to five years (or perhaps every five to ten). We need these to remain very competitive. Otherwise, it is just a price game."
Focus & Race Chapter of Organization	
Hochheiser, 1986: 201	In a span of just two-and-one-half years, Rohm and Haas had become a major player in the several markets that together made up the electronic chemicals industry... It was to encourage the managers of these acquired businesses to be more entrepreneurial, to be willing to take higher risks, and to steer clear of much of the bureaucracy of the parent corporation that Rohm and Haas retained their individual corporate structures.
Wilson, 1999	"[In electronic materials], with semiconductor technology changing so fast, what needs to be done is very clear. At Intel, somebody will lay out the specs of what the next chip needs to do and you can apply that chemistry that will allow them to do that. [Innovation] is much easier than when the customer and internal scientist are not quite sure of what needs to be done."

Table 4-1. continued

MacPhee, 2008	"We hired Paik after missing a generation of photeresists. He instituted mandatory evening seminars on Thursdays; developed a culture of staying late to work on problems; and created aggressive deadlines to meet.
MacPhee, 2008	"Rohm and Haas struggles to innovate because of a lack of passion and urgency. The electronic materials industry is fast changing and so the division has to respond. Paints don't. We need to develop a sense of urgency for the entire company. If all of Rohm and Haas could be as passionate and fast-changing as electronic materials, that would help a lot."
Paik, 2008	"The chemicals business units do not know how to kill projects. How many people can make a real decision? I want to see more decision-making from business people. Don't wait for the market to kill an idea."
Paik, 2008	"When I reviewed Shipley [electronic materials subsidiary], I observed a lot of betting. Shipley had 20 projects with about five people each. Each project was inadequately staffed to make good speed."
Paik, 2008	"To me, it was very clear which projects had to be cut [and which to keep]. Corporate wanted economic value analysis to support these decisions, but I told my finance guys not to do it.
Paik, 2008	"We place big bets relatively infrequently when there is a big change. This is relatively easy for us to do because our upstream partners tell us what the shift will be. In between these big changes, we *run hard* on incremental improvements."
Paik, 2008	"Hi-tech is a relationship business. It involves some golf and drinking… and a LOT of time with customers … to understand how they are using things. … If you have no relationships, they will not let you in."
Paik, 2008	"We do longer hours than traditional Rohm and Haas folks. Maybe it is because Electronic Materials people are realizing that very valuable innovations will pay off."
Fernandez, 2008	"Technology development will be different…Our approach to this new process is up in the air, but I am thinking about a process in which we put together a strong technical group with a budget, for one to three years, and check in on them at the highest level – me, R&D manager, perhaps one or two others… that is, a g goal, a team, a deadline, a budget, and monitoring."
Fernandez, 2008	"I want passionate R&D people who want to own a project, and own the success or failure of that project. I want people who will kill the project themselves and are willing to be judged on the commercial success of the project."
Fernandez, 2008	"Rohm and Haas needs to do more distributed research. Distributed research can give us many advantages. We can do more collaborative partner-based R&D with customers, suppliers and universities…to get more opportunities into the funnel. This industry has not done a lot of collaborative research, so it's like pulling teeth right now. The electronic materials industry has conducted a lot more collaborative research…"
Fernandez, 2008	"Electronic materials has a process that they seem to like. Other than electronic materials, all the business units are tinkering with this process, looking for new ways to facilitate breakthrough innovation."
Fernandez, 2008	"To be successful, we need to develop more ownership and accountability to the innovations and products (rather than the process) for all involved – scientists and marketing people."

Haas managed this R&D structure very personally, reserving most decisions – especially sourcing decisions – for himself, and yet granting wide latitude to the associates he trusted. Associates who could bear Haas's stern, sometimes harsh style, reveled in the excitement of growing a firm and in the span of control he granted loyal followers – especially overseas and in new areas of business (Gregory, 1995). This direct, entrepreneurial structure allowed Rohm and Haas to be extremely responsive to market opportunities – both to customer demand for help in solving various problems and to promising scientific innovations.

Organizationally, the market-driven "buy and apply" phase of the management of R&D was characterized by absolutely centralized, personal control; by tremendous flexibility in adapting both science and organization to meet customer needs; and by a reverence for *practical* scientists who could invent, adapt and sell industrial products. Perhaps more intuitively than consciously, for many years, Rohm and Haas R&D was organized, often in the person of individual scientist-salespeople, to support opportunist response to market and technological signals. While incredibly effective in its day, increasing scale, maturing chemistry and the death of the founding Mr. Haas set of a seismic shift from "buy and apply" to "develop and sell," a shift marked by the MBAs' overthrow of the scientists.

Develop & Sell – 1960s through 1980s. By 1961, when F. Otto Haas took over, the perception had grown that the "commercial acrylic chemistry had reached a relatively mature state," (Hochheiser, 1986: 136). Rohm and Haas responded in three ways: by

emphasizing efficiency and directing its division-based acrylic research toward process improvements; by betting on breakthrough innovation and developing a central research campus dedicated to a concerted search for step out innovations in product and process; and by hedging its research bets through diversification in search of less mature chemistries with commercial applications. In all three efforts, "marketing," or the business side of the house, began to dominate and direct the scientific side.

While the dominance of business concerns was most evident in the reallocation of research towards efficiency and acquisition evaluation, it crept into even central research. Ostensibly, work at the central laboratory was aimed more at classes of solutions (rather than a solution for a specific customer) and given longer time lines – five years or more, rather than three years or less (Retired, 2007). The working assumption was that really smart, experienced scientists could take advantage of acrylic chemistry's complexity and versatility to create enduring competitive advantage. "The beauty of acrylic emulsion polymers is that they are chemically complicated and very flexible – allowing good chemists to 'dial in' specific properties and adapt the underlying chemistry to myriad uses – from leather treatments to adhesives and of course paints" (Brown, 2008). Further, the few scientists assigned to the central research laboratory were officially valued as creators and encouraged to widen the portfolio of possibilities by pursuing "Friday-afternoon projects" in which they followed their own interests (Retired, 2007). At the same time, however, there was increasing emphasis on hierarchical control to harness scientists to business demands and to retain learning. Research goals and timelines were increasingly set by "marketing" and "management," and various business processes,

including a variation on the stage-gate method, were tried to manage the flow and direction of innovations (Brown, 2008, Fernandez, 2008, Retired, 2007). Indeed, to move from preliminary exploration to commercialization, scientists began to have to sell their ideas to division heads to gain more than token funding. Further, to complement the intrinsic motivation to pursue interesting problems, Rohm and Haas implemented a host of individual rewards (annual bonuses, raises, promotions); group rewards (bonuses for lab contribution to the whole); and individual recognition and awards (Gregory, 1995, Retired, 2007).

Perhaps unsurprisingly, internal tension grew during the shift from more-or-less entrepreneurial science, conducted in conversation with customers and peers, and often directed by Mr. Haas himself, to more-or-less regimented science that was tied increasingly tightly to business goals and hierarchical processes. In the 1970s, new CEO Vincent Gregory led the charge, cutting 10-15% of salaried workers, including scientists, for the first time in company history. "I had made almost a mission out of the fact that you can't do research in a cocoon out there in Spring House [the central laboratory], any more than you can ask the marketing people just to sell whatever you make. You need a marriage between marketing and research. They all believed in this, except that there was too much pride at the top in some cases, and I broke that down" (Gregory, 1995). Indeed, both Gregory and his successor, Wilson, began to recruit business people with MBAs to replace scientists in top positions – an unheard of development in both Rohm and Haas and the chemical industry more generally (Gregory, 1995, Wilson, 1999). Further, Gregory instituted the discipline of RONA (return on net assets) to focus

managers on returns, not just exploration of market share – a discipline that became even tighter under Gupta in the 1990s (Brown, 2008).

Of course, many of the "too proud" scientists were disgusted. "Nowadays,…speed and presentation slickness mean more than insight…If a researcher does not meet his goals, if he is not slick in his presentation, he won't get promotions or bonuses and may even be let go, *even if he is doing good work*." (Brown, 2008, *emphasis added*). The scientists questioned how well the new top management and sales people understood the underlying science; began gaming the system to keep projects alive (since predicting both scientific progress and customer's needs was "like forecasting the weather") (Calabrese, 2007); and even resorted to "lying to survive" (Retired, 2007).

Organizationally, the "develop and sell" period was marked by the rise of bureaucratic control, with the attendant emphasis on elaborate processes, role-based authority, individualized, extrinsic incentives, and conformity to formal norms (Weber, 1978). Increasingly, scientists were assigned to teams, and the teams were beholden to "marketing" in the person of division heads and business-oriented lead scientists (Brown, 2008). While star scientists were still lauded and rewarded, their scope was narrowed and tied always to short-term business goals, not discovery for its own sake, or even for its long-term potential. Work on break-through innovations was increasingly relegated to the margins, even as acrylic chemistry, and industrial chemistry in general, matured and the need for radical invention increased. Practically, the company invested more and more in trying to buy in invention, while decreasing the central laboratory's budget (Retired,

2007; Calabrese, 2008.) Happily, some of the acquisition bore fruit in the form of a new set of chemistries and product lines organized into an electronic materials division. But the success of electronic materials depended on the emergence of a new and very different style of R&D management – a scientist-led, clan-like style that at once intrigued and worried the business leaders of the established divisions.

Focus & Race – 1990s through 2009. First cobbled together in 1984 as an adhesives group, the group that became Electronic Materials sold chemicals and processes used in the manufacture of silicon chips and other elements of electronic devices, including displays. Rohm and Haas products included photoresists, insulating materials, chemical-mechanical polishing consumables, electronic packaging, polymers for liquid crystal displays, and more. The underlying science was complex, multi-disciplinary and rapidly evolving – as new as acrylics was mature. Success required expertise in multiple disciplines including various kinds of chemistry, electrical engineering, materials science, industrial design, process design, and more (Brock, 2006).

Crucially, demand for innovation in this field was driven and guided by the Semiconductor Industry Association's International Technology Roadmap for Semiconductors (ITRS). This was a detailed, annual survey of semiconductor manufacturers and their suppliers that tried to predict the future needs of the industry. This roadmap (and others like it in related segments), detailed function and deadlines, but not methods or means. While suppliers competed to meet the demands of the map, end users facilitated innovation by providing rapid, detailed, sometimes public feedback

about which innovations worked and which did not (Brock, 2006, Paik, 2008). The results included increased speed of innovation (for example, the first generation of photoresists took about ten years to develop, the next about six) and increased competition for winner-takes-all stakes. Even as the margins and volumes available signaled tremendous opportunity, the clarity, speed and competitiveness of the process placed tremendous pressure on suppliers like Rohm and Haas. Missing just one generation of development threatened disaster – as Rohm and Hass found out when it neglected to develop its photoresists fast enough and almost lost its single biggest product category in electronic materials (MacPhee, 2008). Further, keeping up was costly in effort, management attention and investment. According to then CEO Raj Gupta, as of 2005, electronic materials accounted for roughly one third of Rohm and Haas's sales but nearly 40% of its R&D budget (Brock, 2006: 95). Finally, success required relentless networking throughout the industry: "Hi-tech is a relationship business. It involves some golf and drinking… and a LOT of time with customers … to understand how they are using things. … If you have no relationships, they will not let you in." (Paik, 2008)

To succeed, this map-driven, network-influenced, multi-disciplinary innovation required a new management structure and style for R&D (Gupta, paraphrased in Brock, 2006, Paik, 2008). After the nearly disastrous missed generation of photoresists, Rohm and Haas recalled Yi Hyon Paik, form its Korean operations to reorganize Electronic Materials. Declaring a crisis, Paik emphasized three elements of organization:

- Focus. He pared twenty projects to three, all tied closely to the map and qualified by crude estimates of market size and market growth (not the stage gate's detailed

business analysis). “When I reviewed Shipley [an Electronic Materials’ subsidiary], I observed a lot of betting. Shipley had twenty projects with about five people each. Each project was inadequately staffed to make good speed.” (Paik, 2008)

- Speed. “[Our map-driven] application technology requires more hours, a faster pace, …. We place big bets infrequently… In between, we *run hard* on incremental improvements.” (Paik, 2008)
- Coordination. Coordination was accomplished through both personal involvement by the business group leader and Thursday evening technology reviews featuring beer, pizza, discussion, and challenge. Throughout, the emphasis was on really understanding the science, the opportunity, differentiation from competitors and the desires of partners/ customers, especially in Asia (MacPhee, 2008, Paik, 2008).

While Paik’s authoritative style in some ways recalled the founding Mr. Haas, Electronic Materials organizational exhibited the hallmarks of the clan form of organization: extreme goal congruence, an emphasis on socialization into the culture and logics, an authoritative status hierarchy, and a reliance on process innovation through horizontal communication (Aoki, 1986, Ouchi, 1980). Central to the model of organization were intrinsic motivators such as belonging, the joy of problem solving and the feeling of contributing to a larger purpose (Osterloh, Frey, 2000, Stern, 2004). “We do longer hours than traditional Rohm and Haas folks. Maybe it is because Electronic Materials people are realizing that very valuable innovations will pay off.” (Paik, 2008). “[Scientists and engineers] want to work on projects where something happens. If they are working on something and nothing seems to be happening that is very dynamic, then their morale is

not high…. [If] they feel it is exciting, things are going on, they are making things happen, the are contributing, they are valued, and they are considered relevant, then you get a lot more [innovation] – especially when the goal is clear" (Wilson, 1999: 8). In short, in response to industry-driven, cross-discipline scientific challenges, Electronic Materials developed a tight, highly socialized, highly focused culture of collaboration and achievement, with fewer bureaucratic layers and processes than evident elsewhere in Rohm and Haas. Further, while market concerns were always addressed, scientists again ran the show.

Others within Rohm and Haas viewed the Electronic Materials group with some bemusement. Clearly, the group was ascendant, with rapid grown, strong margins, extra research resources and key people such as CEO Gupta, the head of international operations (and likely successor to Gupta, before the Dow acquisition intervened), and the VP of strategy all drawn from the group's leadership. Other business units were at once envious of the growth, margins and attention; inspired by the passion and pace of innovation; and intrigued by the possibilities inherent in more distributed, collaborative research (Fernandez, 2008, MacPhee, 2008). At the same time, many thought of Electronic Materials as a special case – with an easier set of problems – because of its customers were so clear and open about what they wanted (Brown, 2008, Wilson, 1999); because customer-university-supplier collaboration was more the norm (Fernandez, 2008); and implicitly, because more resources were available. Still, the other division heads were inspired and challenged by Electronic Materials to consider new, sometimes contradictory organizational priorities ranging from increased involvement of top

executives in research; to an emphasis on "real" marketing (research, segmentation, etc) to guide innovation; to efforts to focus portfolio's on fewer, better resourced projects; to emphasis on scientific selection of projects, rather than market selection; and o an increased willingness to risk both investing in and killing projects (Brown, 2008, Fernandez, 2008, MacPhee, 2008).

Organizationally, Electronic Materials became successful when a new leader facilitated the adoption of a new style of organization that better suited the environmental requirements for speed, rapid adaptability within specific constraints, collaborative science, and close coordination with multiple stakeholders. Buoyed by rapid growth, large margins and even greater potential as a new innovation path, Electronic Materials was clearly the star asset by the time Rohm and Haas was sold to Dow Chemical. But while powerful and influential, the Electronic Materials style of organization was still far from dominant in the company at large, as skeptical division heads continued to question the applicability of the new approach to the rest of Rohm and Haas R&D.

The Fit Between Science and Organization. Our story has been that the management of R&D at Rohm and Haas Company evolved through three chapters – "buy and adapt," "develop and sell," and "focus and race" – and that R&D was successful when there was a fit between organization and the science required for success. Thus, during the formative chapter of the chemical industry, when industries were local and there was tremendous scope for invention and adaptation, Rohm and Haas trolled the (German) market for new inventions and concentrated on adapting those inventions to US

customers' needs. During this chapter, the emphasis was on flexibility and adaptability through a combination of a central coordinator – in the person of Mr. Haas – and cross-trained scientist salesmen. As might be expected, Rohm and Haas performed well when it leveraged its network and scientist-salesmen to bring new technologies to markets, and less well when it tried to compete with rivals on their chemical turf, especially if that turf involved large-scale production and elaborate distribution channels supported by (then) innovative multidivisional organization – e.g., with Dupont in fibers (Chandler, 1962, Hochheiser, 1986).

During the second chapter, when both the original chemistries and the industry were beginning to mature and globalize and competition shifted to economies of scale and of learning, Rohm and Haas was forced to jettison its centralized, flexible structure to develop a more scalable divisional structure. These shifts in science and organization created opportunities for bureaucratic organization to replace entrepreneurial organization and for the MBA guild to gain ascendancy over the scientists. During this chapter, Rohm and Haas was successful when delivering incremental innovations based on its core chemistries, but unsuccessful when it tried either to invent or buy its way onto parallel paths, such as textiles and pharmaceuticals.

In the third chapter, as many industrial chemistries, including acrylics, began to run their course and both suppliers and competitors became increasingly powerful negotiators, Rohm and Haas struggled to find new specialty chemistries to augment its core. While originally assembled to pursue specialty adhesives, its fledgling Electronic Materials

showed promise, until bureaucratic organization almost destroyed the division's ability to keep up with the demands of the marketplace. Only when Electronic Materials was reorganized into a more clan-like structure, with scientists again in the lead and collaboration to the fore, was Electronic Materials able to take off, generating exciting growth, fat profits and a new generation of leadership for the company at large.

Throughout this story, there are glimpses of the struggle between the scientific and MBA professional guilds to define the best way to organize R&D. The traces and nature of this struggle become more evident during the periods of transition between chapters of organization, and we concentrate on these in the next section.

The Dynamics of Professional Conflict in the Organization of Innovation

In this section, we look more closely at the stories told about by scientists and MBAs about the transitions and about each other. Table 4-2 (below) highlights selected quotations that express the views of each professional guild.

Table 4-2: Scientists' & MBAs' Views of Organization and Change in R&D Management

Scientist Guild Perspective	
Hochheiser, 1986: 69	Bruson established a pattern with these discoveries which he would follow throughout his career. Once he found something interesting, he would apply for a patent and then lose interest. Someone else would have to take the discovery from the lab bench to the semiworks and the factory. Bruson would be off trying a new modification of the molecule or working on an entirely new project.
Brown, 2008	"An excellent research and development team for a project headed for commercialization needs one synthetic chemist, three application-oriented chemists, and an engineer focused on scaling up. It should be a mix of wily, long-in-the tooth, hardened, skeptical veterans and younger, enthusiastic researchers with the latest skills. Customers should be informants and partners, not the be all and end all."
Calabrese, 2007	"[T]here is a distinct tension between scientists and business types revolving around issues of time. Technical people always want more time and have a culture of not overselling, of being cautious with time estimates. Business people are impatient and feel that there is no time."
Calabrese, 2007	"While some of the reward is in the form of bonuses and pay increases, some is in the form of privileges, especially more time and encouragement to do one's own work. There is intrinsic motivation in the encouragement to pursue new ideas. This is formalized by selection into the Senior Technical Community which operates as a form of recognition and a club for the best scientists. Related rewards include recognition, invitation to seminars, eligibility to write or sponsor whitepapers, encouragement to spot talent, and more time for one's own work."
Wilson, 1999: 8	"[Scientists and engineers] want to work on projects where something happens. If they are working on something and nothing seems to be happening that is very dynamic, then their morale is not high…. [If] they feel it is exciting, things are going on, they are making things happen, the are contributing, they are valued, and they are considered relevant, then you get a lot more [innovation] – especially when the goal is clear."
Retired, 2007	"I am a scientist and work for the pure love of it. Rewards are not important – probably only half in jest."
Brown, 2008	"Highly motivated R&D scientists may not have social skills, may not have a lot of friends because they have to be right. The will be relentlessly creative."
Brown, 2008	"Nowadays,…speed and presentation slickness mean more than insight. If a researcher is quick and slick, he will get promoted, which is the most important reward, or paid more, or given a bigger bonus, or receive some recognition. If a researcher does not meet his goals, if he is not slick in his presentation, he won't get promotions or bonuses and may even be let go, even if he is doing good work. The problem is that many of the leadership don't really understand the science and can't see the underlying value of some of the scientists."
Brown, 2008	"Rohm and Haas built its success by inventing new products that customers really wanted and needed – sometimes before they knew exactly what thy wanted…[But] attention to Wall Street and quarterly earnings kills creativity by making timelines very short, and by focusing the company on fast, planned innovation…Then, when things don't hit, management begins to cut the tail … to focus on more likely big-hit items. As a result, we don't get the serendipitous discoveries that unexpectedly arise when you have a bunch of small projects."

Table 4-2. continued

Brown, 2008	"I think it makes some sense for [management] to invest more in electronic materials, because it is growing so fast, but just investing doesn't necessarily yield more results. It's critical to have a good portfolio of projects….I don't mean projects that look good or sound good, but ones with real science underneath them."
MBA Guild Perspective	
Hochheiser, 1986: 147	Almost immediately Gregory began instituting changes of the sort expected from a professional manager. He restructured board meetings to focus on single topics, instituted modernized, detailed, numerical analyses of possible strategies, and took steps to formalize long-range planning.
Gregory, 1995	"Look at it as if it's your own, and you're going to be judged by your returns. If you think you want to put your own money into it, well then, make a proposal for it. If you don't want to put your own in it, don't do it."
Gregory, 1995	"I think that there's something that's always been a little conflict here about. That was that I said, for even PhDs – especially PhDs – 'Let's have a two-year or three-year time frame.' You know, if they're not going to make it…sit down and take a real serious look and say, 'You're probably better off somewhere else.'"
MacPhee, 2008	"At Rohm and Haas, the lack of marketing is a big challenge. Traditionally, Rohm and Haas invents products and sells them, without marketing attention to customer needs, segmentation, etc…Rohm and Haas used to look at marketing as advertizing, not as talking to customers. We had a big gap in hearing customers and a culture of ignoring marketing.
MacPhee, 2008	"Our Springhouse research facility has a good collegial environment, but not strong performers who stand up for their perspective, and little outside pressure to stay late, work hard, innovate aggressively."
MacPhee, 2008	"There is a tension between improving the business (making the numbers) and trying something entrepreneurial. The incentives support steady growth more than entrepreneurial growth. … Besides the pressure to the numbers, the business unit heads may also fear losing control of (and not receiving credit for) an innovative business idea once it becomes successful."

Collective, political nature of organizational change at Rohm and Haas. The stories told about the transitions from organizational phase to organizational phase were suffused with tension and misunderstandings. Note the defiant tone, even years after the fact, when Gregory described the MBA victory during the transition into the Develop and Sell phase of organization, "You need a marriage between marketing and research. They all believed in this, except that there was *too much pride at the top in some cases, and I broke that down*" (Gregory, 1995, *emphasis added*). To support his agenda, Gregory shifted both stories and structure to reinforce the new regime. Out went intuitive, science-led decision making about new projects; in came the language and tools of the MBA, including "modernized, detailed, numerical analyses of possible strategies" (Hochheiser, 1986: 147) and formal long-range planning. Out went scientist-managers with wide remits; in came "hybrid management" in which all research managers were paired with marketing people (Gregory, 1995).[15] "We came to the conclusion – I came to the conclusion and so did some others – that, 'You know, market share isn't enough. There's got to be return on investment. We've go to have our people involved in this business, so that they're out growing them like they're their own business – so they're not just spending company money,' and so forth. That's when we adopted RONA. It was more than just a formula for return on net assets. It was a philosophy of doing business." In short, Gregory and his cohort were able to re-frame the management of R&D in terms of the logic of management and over time, mobilize enough allies and resources to create a new, dominant narrative and organization.

[15] If they were perceived as talented enough, "maverick" scientists were "tolerated" and granted small amounts of time to spend on anything they wanted, in case they hit with something entirely new (Gregory, 1995).

Of course, this philosophy of doing business and its accompanying structures were interpreted quite differently by those in the ousted scientific guild, who downplayed business criteria and questioned the *scientific* effectiveness of the new approach. "Both Haas leaders had a chemistry degree and really understood the science, as did all the executives and sales people. [Then], Gregory, a Harvard MBA, took over and began hiring consultants to reorganize the company. They emphasized attention to customers and their needs – which led to lots of incremental improvements but less invention. The company became dominated by marketing types, and increasingly top management and sales people did not understand the underlying science" (Brown, 2008). There were also concerns about "marketing" relying on "fuzzy" data about the demand for innovations and real worry about the increasing demand on scientists to justify their existence through revenue-generating discoveries, at the risk of ongoing employment (Retired, 2007). As with most political processes, the worries were translated into resistance, including "lying to survive" and gaming the system to keep projects alive. "…[T]echnologies, and projects, were seldom completely killed. Often the technology and some of the people would find a new home in a business unit. Or the project would be scaled way back but kept alive by a small group of scientists." (Retired, 2007.)

Decades later, during the transition to the Focus & Race period, Paik from Electronic Materials sounded a similarly defiant tone in leading his new approach to management of R&D. "The chemicals business units do not know how to kill projects. How many people can make a real decision? I want to see more decision-making from business people. Don't wait for the market to kill an idea" (Paik, 2008). Science was clearly back

in control, at least in Electronic Materials: “When I review the business, I want to see the molecular structure level. I want to understand the science…” (Paik, 2008).

Again, the ascendant story was matched by the mobilization of people and resources, notably an influx of Electronic Materials management into top positions and the tinkering with R&D management structure in other business units (Fernandez, 2008; MacPhee, 2008). And again, there was doubt and resistance, this time from the MBA side, who labeled Electronic Materials exceptional and questioned the applicability of its approach to the rest of the firm. “[In electronic materials], with semiconductor technology changing so fast, what needs to be done is very clear. At Intel, somebody will lay out the specs of what the next chip needs to do and you can apply that chemistry that will allow them to do that. [Innovation] is much easier than when the customer and internal scientist are sure of what needs to be done.” (Wilson, 1999).

Roots of tension. The tension between MBAs and scientists were deeper than a difference in interests or even in the desire for power for ones’ group. The tension reflected differences in goals, ways of thinking and even motivation. In particular, commentators noted differences between scientists’ and MBAs’ measures of effectiveness (a reflection of difference in goals), approach to time (a reflection of differences in values), and basic motivations. Thus, the Rohm and Haas scientists measured effectiveness in terms of the quality of the science, both in general and as creative way to solve problems for clients. For their part, the MBAs focused on innovation as a means to an end, regardless of the intrinsic value of the science itself. “I

want people who will kill the project themselves and are willing to be judged on the *commercial* success of the project" (Fernandez, 2008, *emphasis added*).

Similarly, while both guilds valued primacy, for MBAs speed trumped content, while for scientists, urgency never superseded the importance of getting the science right. "[T]here is a distinct tension between scientists and business types revolving around issues of time. Technical people always want more time and have a culture of not overselling, of being cautious with time estimates. Business people are impatient and feel that there is no time." (Calabrese, 2007) "I think that there's something that's always been a little conflict here about. That was that I said, for even PhDs – especially PhDs – 'Let's have a two-year or three-year time frame.' You know, if they're not going to make it…sit down and take a real serious look and say, 'You're probably better off somewhere else'" (Gregory, 1995).

Finally, the two groups operated with different assumptions about what does, and should, motivate behavior. The scientists emphasized the intrinsic motivation of problem solving and acceptance: "I am a scientist and work for the pure love of it. Rewards are not important – probably only half in jest." (Retired, 2007). For managers, motivation was all about performance and performance pay, "Look at it as if it's your own, and you're going to be *judged by your returns*." (Gregory, 1995, *emphasis added*).

Synthesis? Particularly in the unfinished transition to Focus and Race, there were traces of a process of reconciliation of a sort, as the MBAs and scientists within the group

struggled to find new stories and arrangements that resolved the tensions they felt and the contradictions they perceived. As Electronic Materials gained influence through its contributions to growth, profit and corporate management, even marketing types began to question the established MBA approach – "We are killing too many things with the stage gate process. It's detrimental to innovation." (Fernandez, 2008); further, they began to consider change in the image of Electronic Materials: "If all of Rohm and Haas could be as passionate and fast-changing as electronic materials, that would help a lot." (MacPhee, 2008). "Electronic materials has a process that they seem to like. Other than electronic materials, all the business units are tinkering with this process, looking for new ways to facilitate breakthrough innovation." (Fernandez, 2008). Indeed, it is possible to read the management of innovation during the Focus and Race phase as a partial synthesis between the science and MBA guild approaches to the management of R&D. Paik and his management team combined the scientists' insistence on the primacy of understanding the science with the MBAs' emphasis on understanding the customer; further, they ran their team as hard and fast as any MBA could want while emphasizing the kind of collegial review and coordination that would make a scientist proud.

Theory Development: Endogenous, Negotiated Change in Organizational Structure

The dynamics during the periods of transition highlighted the decades-long political struggle between the scientist and MBA professional guilds for the control of R&D at Rohm and Haas. This struggle involved insurgent logics invoking traditional – in this case, the firm's founding – culture and values (Suddaby, Greenwood, 2005) and attempts by groups to mobilize allies around frames of reference and logics of action (Bacharach,

Sonnenstuhl, 1996). That is, the process of organization resembled an ongoing, more or less civil, power struggle between logics embedded in the stories told by various identity groups (Davis*, et al.*, 2005). Throughout, there were sometimes conflicting, sometimes reinforcing change, stability and resistances narratives spun by competing groups (Sonnenshein, 2010). Occasionally, the back-and-forth struggle led to changes in the dominant guild, story, logic and pattern of organization.

Whether or not a given period of struggle led to organizational change, the Rohm and Haas experience underscored that the process of organization is played out between identity groups; even when individuals play important roles – as did Gregory and Paik, for example – they did so as representatives and products of the guilds that shaped their identities, perceptions, language, goals, values and assumptions about human nature, including human motivation. That is, the struggle was more profound than a struggle between groups with similar motivations but different interests; it was a struggle between groups with remarkably different ways of being in and interacting with the people and structures in which they are embedded.

This struggle was generative in two ways. First, because the differences are deep-seated, there was at every moment both tension and the possibility of change; for every story and structure dictated by the dominant group, there was a counter story and a counter structure – or at least a question and a proposal ready to fill any available space. Neither the scientists nor the MBAs stopped talking, questioning and resisting when the other guild was dominant. Second, the struggle was generative to the extent that the story-

telling groups found, through contested dialog, a partial, temporary, immediately questioned but nevertheless new, creative and shared perspective – as seemed to have happened in the management of R&D within Electronic Materials.

Towards A Collective, Dialectical Model of Organizational Change

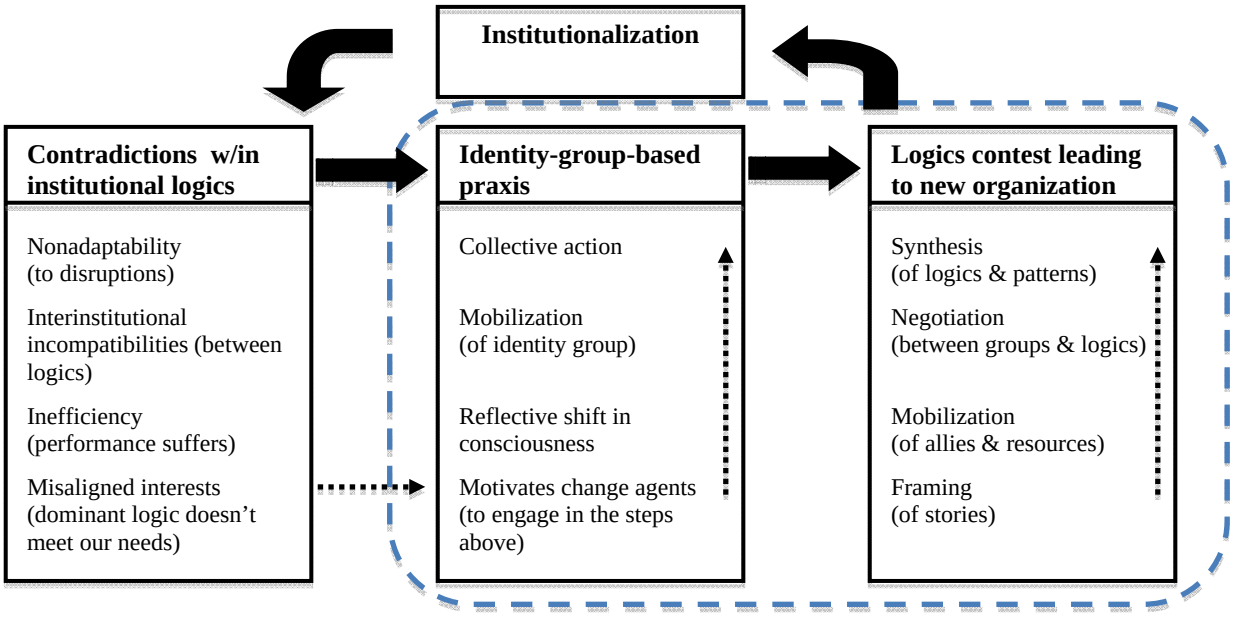
The way the struggle between guilds shaped organization at Rohm and Haas is consistent with dialectical theories of organization. Our findings recall Hargrave & Van de Ven's (2006) collective action model that explains change as emerging from a dialectical process in which opposing actors in the organizational field 1) frame issues, 2) mobilize networks and resources, 3) enact institutions and 4) struggle/negotiate with other actors in an attempt to introduce new institutional arrangements. They suggest that the dialectical tension between actors and actors' frames animates change, both in response to external change and as a result of internal shifts in the balance of power between actors and their frames. Precisely because actors belong to multiple groups and so are embedded in several logics – those of their profession, work team, or organizational field – actors experience ambiguity and contradictions that creates space for new ideas, new arrangements, and the renegotiation of existing arrangements (Levina, Orlikowski, 2009). That is, in any organization or organizational field, "multiple kinds of historically rooted belief systems provide the foundation for ongoing conflict and change" (Marquis, Lounsbury, 2007: 800) because the contradictions between actors lead to a constructive questioning of the dominant logic, to the consideration of new possibilities, and to motivation for collective action to change logics. Notably, the very elites that dominate firms and fields are often, by virtue of their membership in cross-firm, cross-field elites,

exposed to other logics and so in a position both to see new possibilities and to encourage their peers to try new arrangements (Greenwood, Suddaby, 2006). Consistent with this view, the Rohm and Haas experience suggests that tension between guilds' logics sensitizes internal actors to both contradictions and new possibilities.

Digging more deeply into the dialectic of organization change, Seo & Creed present a model in which many levels of interacting institutional arrangements generate contradictions, conflicts and tensions that inspire and enable "partially autonomous actor[s] situated in a contradictory social world" (Seo, Creed, 2002: 230) to name and change (ie., engage in praxis) some aspect of organizational or institutional arrangements. Further, they identify four contradictions – inefficiency, non-adaptability (similar to strategic persistence), incompatibilities between various institutional structures in which actors are embedded, and misaligned interests – as catalysts for both incremental and, in times of crisis, revolutionary change. Missing from this model, however, is insight into *how* embedded agents shake free of institutional constraints enough even to notice these contradictions and *how* the *collective* action implied in praxis actually plays out through political activity and negotiation into organizational or institutional change. The Rohm and Haas experience suggests that the dialectic process is inherently collective and that the persistent tension between identity group logics creates enough friction and contradiction to erode, alter and combine group stories, thus leading to endogenous change despite being embedded.

We present in Figure 4-3 a process model of collective, guild-based, dialectical organization that extends and applies to organizations the model of institutional change presented by Seo & Creed (2002). Our model shares with Seo & Creed's the essential cycle of change in which four types of contradictions in institutional logics catalyze praxis to create new organizational arrangements that, in time, become institutionalized, thus setting up new contradictions (Seo, Creed, 2002: 229, 240). Our model differs from Seo & Creed's in its emphasis on the organizational level of analysis and the insight that the process is always collective – from the experience of contradictions to the social-movement-like framing contests (Kaplan, 2008) that lead to new, if inevitably temporary, organizational arrangements.

Figure 4-3. A Collective, Dialectical Model of Organizational Change



This emphasis on praxis as the provenance of identity groups, not individuals, shifts the model in several important ways – as indicated by the boxes within the dotted lines and summarized in the following propositions. First, it suggests that contradictions in logics are both generated by differences in and perceived through the identity groups' lenses For example, scientists might well interpret inefficiency or maladaptation quite differently than MBA-trained managers, leading to both real and perceived contradictions in performance monitoring and management – but also to sensitivity to different sorts of contradictions in institutional logics. Thus,

Proposition 1: The contradictions that animate organizational processes reflect different, guild-based interpretations of adaptation, inter-institutional fit, efficiency and interests.

Second, the idea that praxis as logics contests between guild-anchored narratives, emphasizes the role of identity formation in the process of organization. Because the identity-defining process itself is a continual process of comparison between individual and collective stories (Hogg, Terry, 2000), and of identifying with group exemplars while differentiating from the exemplars of other groups, the process of reaffirming membership in an identity group tends to awaken the perception of contradiction and the motivation to engage in praxis. That is, the very striving to belong carries with it the possibility of agency in changing, at least partially, the logics in which we are embedded. But the identity process also contains within it the seeds of reconciliation in that the collective definition of identity tends to resolve contradictions and lead to a partial

syntheses of stories and so to new, partially overlapping (and inevitably temporary) logics.

Proposition 2: Emerging organizational patterns reflect a synthesis of previous guild narratives (although each new synthesis creates new contradictions between logics and so sets the stage for the next round of struggle and synthesis).

Finally, to the extent that the perceptions and motivations of identity groups are both distinct and distinctive, the seeds of endogenous change always exist in the tension between guilds. So long as professionals are socialized into different guilds with idiosyncratic goals, values, and ways of thinking, the differences between guilds can never be fully resolved, however vigorous the logics contests and however creative the syntheses. Thus, so long as there are different guilds with different logics, there will be always another way to interpret a situation, another chance to notice a contradiction, another story waiting in the wings. That is, so long as a firm depends on multiple guilds, there will be a deep-seated restlessness that, from time to time, will erupt as change processes, regardless of external pressures. The longing to belong may be, ironically, the key to solving the paradox of embedded agency.

Proposition 3: Endogenous change arises from the never-ending tension between guilds.

The Restless Identity Politics of Organization:

Implications for Theory, Research & Practice

The purpose of our detailed study of the management of R&D at Rohm and Haas was to explore the roots and mechanisms of the flux of organization, in part to understand how path-dependent organizations manage to change, more or less from within, as the environment evolves. Combining institutional, social movements, and narrative approaches to organization with a close reading of the evolution of organization at Rohm and Haas, we argue that dialectical models of organization can be enhanced by seeing organization as a political contest between identity groups. In such contests, the struggle is shaped and stimulated not so much by varying interests (though they surely play a part) as by differences in deeply socialized identity group logics – such as those that distinguish scientific and MBA professional guilds. These differences fuel a certain restless tension: So long as guilds coexist, there will always be varying interpretations of external and internal situations, always the perceived contradictions that drive praxis and so change. This restless tension is a "generating mechanism" (Pentland, 1999: 719) that, along with routines and perhaps the push for efficiency, drives the process of organization, including endogenous organizational change. This generating mechanism is played out as awareness of contradictions, followed by logics contests between identity groups, and partial syntheses of narratives and logics translated into new – and temporary – organizational arrangements.

One implication for theory of this idea of identity-group-anchored, logics-driven synthesis is that it might well be facilitated by boundary spanning actors who navigate

split identities between guilds (Gutierrez*, et al.*, 2010) in part by providing the translation (Whittle*, et al.*, 2010) and "shared syntax" (Carlile, 2002: 451) that support the interactive, iterative creation of a new, shared story of organization. It is certainly suggestive that the founding and both periods of transition were led by boundary-spanning figures. Mr. Haas literally spanned worlds, moving back and forth between the lab and sales calls on customers, and between executive offices in the USA and buying trips to Germany; Gregory was selected to be CEO by F. Otto Haas precisely because he was trained as an MBA and not a scientist and had learned Rohm and Haas's business in the hinterlands far from headquarters; and Paik was recruited from a Korean subsidiary office to reinvent Electronic Materials. Given the Rohm and Haas experience, we would expect to find such boundary spanners playing important roles in perceiving contradictions between logics; in inspiring others to engage in the collective struggle for change; in the cultivation and management of the logics contest between guilds; and in facilitating syntheses. In short, the function and process of boundary spanning (as opposed to the network architecture of boundary spanning (cf., Burt, 2004)) deserves more research attention.

Another implication for theory is that logics might be as fundamental a unit of analysis for understanding organization as routines have proven to be. Routines are repetitive, collectively understood and performed patterns of behavior that facilitate tasks while shaping perception and cognition as well as behavior; routines are learned through doing and reinforced through regular performance; and yet the performance of routines is always somewhat idiosyncratic leading to variation, contradictions and the possibility of

change (Feldman, Pentland, 2003, Pentland, Feldman, 2005). Similarly, as we have seen, logics are learned through doing; shape perception, cognition and behavior; and are performed as stories, thereby both reinforcing themselves and generating the possibility of variation, contradiction and change. The critical difference between routines and logics seems to be that routines are tied to tasks and the task environment while logics are tied to groups and identity. That is, routines arise from collective action while logics arise from the collective search for identity. Thus, to the extent that organizations are arenas for both action and identity, it seems important to understand both routines and logics. In the case of Rohm and Haas, paying attention to the role of guild-based logics contests contributed to a more complete understanding of changes in the firm's management of innovation and into its movement in and out of synch with the technological context. Looking at the interaction between professional guild logics and innovation routines – such as the stage gate process – might provide even richer insight into the management of innovation.

Methodologically, to the extent that it is productive to conceptualize organization and change as a struggle between identity groups and their respective logics, it could be useful to borrow methods from anthropology and history and to analyze firm and guild narratives hermeneutically, looking for residues of past stories and actions, identifying current shifts in usage, and discerning the logics each reveal (See, for example, Ricouer, 1981). Further, an analysis of forces and narrative threads running through current stories and identity group logics might shed light on help predict the trajectory of future evolution, including the likelihood of shifting onto to a new technological or

organizational path. Finally, because of the importance of narrative, semantic network analysis techniques, including multi-dimensional scaling, could be employed to track the rise, fall and synthesis of guild logics (Corman*, et al.*, 2002, Dooley, Corman, 2002).

Practically, the Rohm and Haas experience suggests the importance of paying as much attention to the management of professional guilds as to the management of tasks. Cultivating and managing competition between guilds promises to reduce organizational rigidity by provoking and enabling embedded agents to perceive and change organizational arrangements in response to both external and internal signals. Further, maintaining measured competitive tension between guilds might well increase the creativity with which a firm responds to external shocks (Fosfuri, Ronde, 2009). Thus, managing and even cultivating tension between guilds – perhaps through the development of effective boundary spanning roles and processes – might well improve a firm's flexibility in generating organizational solutions to novel challenges – such as, in the Rohm and Haas case, the challenge of managing the novel science and stakeholder relationships required to be successful in electronic materials.

Finally, our detailed, historical study of the management of R&D at Rohm and Haas highlights the central role of identity groups – especially professional guilds – in the life and organization of firms. While managers often bemoan the effect of politics in organizations, the Rohm and Haas experience suggests that politics are merely an expression of the fundamentally human search for identity through belonging. To the extent that guild membership is just part of who we are, effective managers will embrace

and manage the contest between identity groups as one more lever for achieving productive and innovative collective action.

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