

## GETTING STARTED

### Initializing "Organization" Around New Technology

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**ABSTRACT:** Our research analyzes how organization dynamics develop in order to initialize telebanks, which can facilitate (or hinder) the enactment of enabling (or coercive) structures. The data revealed that sometimes actors accept the constraints of social roles and technology and, at other times, they exercise agency to circumvent those constraints. The differences in organizational development are explained with the concept of bricolage and the structural characteristics that facilitate its occurrence. A culture supportive of learning and perceptions of psychological safety were found to be preconditions for enabling organizing, in that they increase the deployment of previously acquired knowledge, resources, and routines; facilitate the enactment of design and planning; and nurture improvisation and bricolage, thus increasing familiarity with resources and the willingness of people to actively participate in the organization's design.

**RESUMEN:** Nuestra investigación analiza la forma como se desarrollan las dinámicas organizacionales que inicializan telebancos y que pueden facilitar (o limitar) la generación de estructuras facilitadoras (o coercivas). Los datos revelaron que por veces los actores aceptan las limitaciones de los papeles sociales y de la tecnología y que otras veces ejercitan su agencia para pasar al lado de esas limitaciones. Las diferencias de desarrollo organizacional son explicadas através del concepto de bricolage y de las características estructurales que facilitan su ocurrencia. Se descubrió que una cultura que apoye el aprendizaje y percepciones de seguridad psicológica son precondiciones para una organización facilitadora por que aumentan la aplicación de conocimiento adquirido anteriormente, ayudan las tareas de diseño y planeamiento, y nutren la improvisación y el bricolage, aumentando la familiaridad con los recursos y la voluntad que las personas tienen en participar en el diseño de la organización.

Julian Orr's ethnographic studies of service technicians' work illustrates how the view of work that predominates within an organization can overlook, and even oppose, what and who it takes to get the job done (Orr, 1990; 1996). The author discovered that the practices enacted by technicians in their everyday coping with troubled machines are richer and more complex than what the prescriptive documentation provided by the company would suggest. In other words, he sees practice as central to understanding work, focusing on what is done and what needs to be done in the reality of the job, as well as how

the work actually progresses. Any work space is embedded in, and makes use of, an unarticulated background of experiences and circumstances. Hence, practice is in itself a sense-making endeavor. Orr's findings show that the practice of experienced technicians maintaining photocopiers involves highly skilled improvisations that articulate technicians, customers, and machines. In order to do their jobs, technicians learn to make better sense of the machines, in the real activity of their daily work, than their organization admits. Such an approach is both highly situated and highly improvisational.

Vann and Bowker (2001) noted that practice is an emergent relationship between "real work" and "the designed organization." It refers to actual activities of work around design or situated doings of individual human beings (micro) and the different socially defined practices (macro) that individuals are drawing upon in these doings. Organizing work therefore starts with practice and examines how it enacts emergent structures. For the advocates of the practice-based approach, the field of practice is composed by knowledge, meaning, and human activity that occur within the total nexus of interconnected

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human practices (Schatzki, Knorr Cetina, & Von Savigny, 2001). Knowledge is conceived as notions and categories that practitioners need to possess in order to manage (Tsoukas & Cummings, 1997), so that they know how to act within a certain domain. By enacting generalizations, practitioners learn to make use of these categories, the application of which depends on how collective understandings and experiences evolved (Wenger, 1998).

Technology is conceptualized as a socially accomplished activity, constructed through the actions, interactions, and negotiations of the multiple actors and the situated practices that they draw upon. However, it is more than a social construction or individual enactment, in that it can prevent users from doing whatever they wish (Quattrone & Hopper, 2006). Despite the diverse professional groups' interpretations and meanings attached to the technological system and the difficulties in reconciling these differences, often the various groups referred to technological system as the same thing.

Orr's study set the foundations for our departing conceptual background. Our goal is to understand how organizational members interpret and use the technology involved in two telebanks from their inception, and how and why these interpretations can enact different forms of work organization in call centers. Data revealed that sometimes actors accept the constraints of social roles and technology and, at other times, they exercise agency to circumvent those constraints.

The study was conducted within the interpretative tradition of information technology (IT) studies (Walsham, 1993). We adopted an inductive approach and, accordingly, did not specify theory a priori to guide our data collection and analysis. We seek to develop an empirically grounded theory that examines how work in call centers gets organized and how "organization" emerges from daily practice. With this, we aim to contribute to the understanding, from within the "black box," of the importance of founding and the effects of imprinting, which have received great attention from organizational ecology researchers, but less so at the level of the organization.

Our research falls into line with studies in which different outcomes result from the implementation and use of nearly identical technologies in highly comparable settings (e.g., Barley, 1986; Campbell-Kelly, 1996; Orlikowski, 1993; Robey & Sahay, 1996).

In the following sections, we analyze how and why two nascent organizations that started up more or less at the same time in the same field and within the same financial group developed diverse social and structural characteristics that led to two very different organizations. One of these facilitated the enactment of what Adler and Borys (1996) called enabling structures, whereas the other led to the emergence of coercive structures.

## METHOD

Our goal is to understand how organizational members interpreted and used an integrated technology at two sites. We called them ORGANON and MACHINA.<sup>1</sup> These were two telebanking systems belonging to the same financial group—CORP. CORP was the result of the efforts of a group of European investors who were dissatisfied with the level of banking service available in their country. CORP was founded in 1985. Its overall goal was "to become a major bank by providing excellent, innovative, and personalized products and services that are designed to meet all the financial needs and expectations of the most important domestic market segment."

Telemediated banking service involves the integration of telecommunications and computer technology to remotely provide personal financial services. The technology involved is complex and integrates most banking transactions. However, the enactment of both the technology implementation and the work practices presented many idiosyncratic features, which possibly explains the effectiveness of ORGANON and the failure of MACHINA. The former had an average service level of 85 percent, whereas the latter had 43 percent during the observation periods for the same average of occupancy. Moreover, MACHINA closed its doors in 2002.

In order to understand what structures and social characteristics were enacted that led to the perception of two almost opposed modes of organizing within the same corporate context, we made use of an interpretative approach, focusing on the subjective descriptions of multiple participants' practices and their expressed thoughts and feelings about the technology and their work.

Because our aim was to construct theory, we followed grounded theory building: "a way to understand why and how structures, conditions, or actions might arise, to discover generative mechanisms, to explore conditions under which their effects might change or stay the same, and to qualify their temporary and emergent aspect" (Dougherty, 2002: 849). The procedure captures the complexity of organizational life by conceptualizing social issues in terms of their interactions within the context of practice.

### Data Collection

We used observation, ethnographic interviews (Dougherty, 2002; 2004), and documents as data sources. We spent two periods of two weeks each observing life and interviewing personnel at each site and analyzing documents and memoranda. Observations of meetings, of training classes, and especially of individuals at work were carried out throughout the fieldwork. Observation was possible because the first author

was given good access to the sites (in particular, to ORGANON). Being on site, she had direct access to team members, interacted with them, and attended training sessions and other less formal interactions, such as casual conversations and observations.

Interviewing was the second technique used for data collection. Interviewees from different hierarchical levels, some responsible for clerical work, key users, and others involved with the implementation of the system were held. Ethnographic interviews (Dougherty, 2002; 2004) were used to capture people's stories of everyday practice, because these reflected people's interpretative schemes about technology, work design, and how it evolved. This design is suited to delineate core characteristics of work practices and their subtleties. We did not have a preformatted checklist of questions to be answered in a classic question-and-answer session. Rather, the questions were reshaped and analyzed with interviewees so that they could discuss how they experienced the implementation and use of the telebanking system, and what kinds of things were meaningful to them.

The call center manager at each site directed the first researcher to people who were involved in the implementation and use of the system. Overall, 57 ethnographic interviews were conducted. Each interview lasted about one hour. In line with Bechky (2003), in order to have full coverage of the professional segments, five different groups of practitioners were interviewed: (1) the CEO, to negotiate the extent of the access, and to get contextual information and documents; (2) senior, project, and call center managers centrally involved in the telebanking system implementation; (3) technicians involved in the implementation or use of the technology; (4) supervisors or equivalent and operators, regular users that handle the transactions with the customers; and (5) external consultants, responsible for the implementation. These groups of practitioners shape the construction of practice through who they are, how they act, and what sources and resources they draw upon.

All of the interviews were tape-recorded and transcribed verbatim. The interview data revealed the kinds of interactions people were engaged in, the nature of their participation in work design situations and activities, what they knew about designing work in telebanking, and how and why the existing structural characteristics influenced their enactment of different features of designing work around the technological system. These data allowed us to add some new insights regarding general patterns of organizing that shape everyday interaction.

As a final source of data, documents such as training manuals, annual reports, and newsletters were consulted. These allowed us to understand the institutional endorsement of ORGANON and MACHINA.

## Data Analysis

Grounded theory building conceptualizes organizational issues in terms of their interactions with the context of practice in order to tease out, identify, name, and explicate themes that capture the underlying dynamics and patterns in the complex system of organizational life. The goal of the data analysis is to discover and name themes or categories that capture the pattern of social action that the study is seeking to understand. We followed the analytical steps elaborated by Dougherty (2002; 2004): "open coding" (finding and labeling the themes in the data), "axial coding" (intense analysis around one category across the data, which generates cumulative knowledge about the relationship between that theme and others), and "selective coding" (to articulate a core category that integrates others into a theory).

Open coding was carried out by comparing and contrasting particular passages of the interviews, notes, and documents. We formed 100 codes, each associated with one or more text segments. Because we framed this research as interpretative, the data mainly reflect the interpretations that various organizational members formed about the telebanking system and their work in relation to the implementation and use of the system. Coding categories reflected the views toward the implementation and described a variety of actions taken by the participants.

Axial coding implied putting the coded data back together in new ways by grouping similar concepts. Axial coding resulted in the reclassification of data into two broader categories—organizational culture and implementation process. Samples of categories resulting from axial coding contrasting the enacted structures and social characteristics in ORGANON and MACHINA, in each of the aforementioned categories, are provided in Table 1.

Finally, during selective coding, we integrated all of the analyses into specific activities that were crucial to the ongoing generation of an enabling structure and a coercive structure. Once we understood these activities and coded selectively from them, we were able to formulate a storyline that portrayed a coherent conceptualization of the main phenomenon.

## RESULTS

One overarching issue that was clear from the comparison of the two research sites was that the two groups hold almost opposite perceptions of their own telebanking philosophy, how their work was enacted, and even the knowledge required to do a similar job. This, in turn, filtered their eagerness to work and learn.

The analysis produced major insights that together formed the empirically grounded theory. The central issue is what

**TABLE I**  
**Sample Categories Resulting from Axial Coding Contrasting Enacted Structures and Social Characteristics and Their Perceived Outcome in ORGANON and MACHINA**

		Sample codes within categories (axial coding)			
		ORGANON		MACHINA	
Category and description		Structuring	Outcome	Structuring	Outcome
Organizational culture Attitudes and beliefs toward the organization		Teamwork, informal communications, and flexibility.	Teamwork spirit instilled because members had to rely on each other because they needed to master their tasks while addressing the specific nature of their work for system design. Experimental culture or cultivating improvisation, on-the-job training.	Individual competition.	No informal relations and no reliance/support on each other, no learning from each other.
Implementation process Implementation process as phased by participants			Design-using as a recursive process, flow between design and using. Looking at the ongoing activity.		Implementation process was black-boxed to the workers (neither participated nor shared different types of knowledge, a highly individualized job design where teamwork was not reinforced) because a multinational consultant company was in charge of the entire project.
Phase		One	Two	One	Outcome
Technology		Basic application developed internally, group central system and telephone system.	Front-end solution: TCS, voice response system, Meridian Max, Workflow.	Technology had only minor adaptations from ORGANON version.	Except for one technician, nobody inside telebank had any knowledge about the banking main system or how TCS worked. The replica of ORGANON was imposed on MACHINA and technology was perceived as an off-the-shelf solution.
Location		Located close to the group central telemarketing department. Moved to a technological park close to the group main services.		MACHINA was located on the outskirts of a city, isolated from any other firm of the group.	Cultural values of the group were not shared by MACHINA members.
					Sharing knowledge and experience from other groups of employees working in a similar area, which instilled a supportive culture from the start. Exposure to the organizational culture (means of control).

<p>People</p>	<p>Project team</p>	<p>Manager and three operators.</p>	<p>Cross-sectional internal project team of five and six external consultants.</p>	<p>First, very good knowledge of the group, thus in order to build work practice and routines they only needed to acquire procedural knowledge of the group's main system. On-the-job experience was valued. Second, broad participation in the whole flow of design-using, hands-on multifunctional problem setting and solving and large pool of various types of tacit knowledge. Facilitate reflection-in-action by formally assigning people to oversee the entire process.</p>	<p>Being a project team member meant arriving when MACHINA was ready to operate. This group was composed of four supervisors, five bank directors, and one external consultant.</p>	<p>No involvement or commitment was instilled.</p>
	<p>Designing work</p>	<p>Change from an informational support to full service. Organizing work as an emergent process. Four hierarchical levels emerged due to need for specialization. Operator's participated in parallel team working projects that were also a context for developing informal relations and opportunities for mutual support. Back office moved out of ORGANON.</p>	<p>Operators were curious to understand the underlying logic of all of the changing processes, they sought for information through improvisational practices. Evolving from one practice to the other over time. Emergence of hierarchical organization of work and division of labor, due to size and to the urge to keep high motivation levels. Designing work was an adaptive recursive process. Parallel bricolage and psychological safety. Work was divided into markets, not competencies; this separates designing from using and their work became highly partitioned.</p>	<p>Organization of work was designed by the consultant company, supra-imposing modes of operating and organizing. Work design and practices were copied from First Direct. Organizational structure mirrored that of conventional banks of the group. Direction of communication, back office, and complaints is less powerful inside MACHINA. The communication area was isolated from the other departments and the operators had partitions between them. Hence, no interaction among operators and collective learning. Two hierarchical levels were created to be able to keep operators under control. Complaints area moved out of the communication area.</p>	<p>Organization of work was designed by the consultant company, supra-imposing modes of operating and organizing. Work design and practices were copied from First Direct. Organizational structure mirrored that of conventional banks of the group. Direction of communication, back office, and complaints is less powerful inside MACHINA. The communication area was isolated from the other departments and the operators had partitions between them. Hence, no interaction among operators and collective learning. Two hierarchical levels were created to be able to keep operators under control. Complaints area moved out of the communication area. Excessive levels of human and IT-based control to stress conformity to the norms and standards. Standardization of tasks and use of IT-control regulated and circumscribed operators' behavior. Performance metrics perceived as unfair, because they were established by the back office.</p>	<p>"Design-precedes-execution" with a clear separation of designing from using and parts from the whole. No employee participation. Operators were not able to learn more than what was strictly required by clients and even this learning was dependent only on supervisors. Highly individualized job design where team spirit was not promoted. Thus, learning with coworkers or by-doing was not encouraged. MACHINA was a replica of three templates.</p>
	<p>Control and surveillance</p>	<p>Control and surveillance (call listened in on by supervisors)</p>	<p>Roles in general become more specialized and it is expected that the bricolage will decrease. Supervisors were perceived as having a facilitative role. Call coaching by supervisors was perceived as an unobtrusive control, it was understood as a discipline, constructive and learning device (third-order controls). Performance metrics were felt to be a fair representation of their performance.</p>	<p>Excessive levels of human and IT-based control to stress conformity to the norms and standards. Standardization of tasks and use of IT-control regulated and circumscribed operators' behavior. Performance metrics perceived as unfair, because they were established by the back office.</p>	<p>Generalized feeling of fear and sense of self-defeat. Individual resistance routines. Only supervisor-led learning was possible and no room for "safe enclaves." IT-measures imposed blindly on operators.</p>	

constitutes practice around telebanking systems, or what can be organized that may facilitate or hinder the enactment of an enabling structure. The theory is that people generate practice-based knowledge for the enactment of enabling structures if (1) they interpret their organizational culture as supportive of learning and (2) design and use are intertwined.

### Supportive Organizational Culture

Empirical studies that regard technology as a cultural artifact that embodies social values and assumptions have reported contradictory consequences resulting from the use of technology (e.g., Cooper, 1994; Pliskin, Romm, Lee, & Weber, 1993; Robey & Azevedo, 1994). The same technology may produce positive social meanings or negative meanings, such as the restriction of personal freedom (Feldman & March, 1981). Our cases clearly showed that people at the two sites framed their organizations in very different ways, which, in turn, had effects on their general performance.

At ORGANON, people were proud to work for an informal organization. As one manager explained:

We don't have a real organizational chart. We might draw one from time to time. But we never approve it. When we approve something, we rapidly want to change it. . . . We have to make the decision to change it. Furthermore, having an approved structure would go against [our goal of] remaining highly flexible . . . or flexible enough so as to ensure the creation of innovative products and services that meet the needs of the market. What we definitely do not want is to fall into the bureaucracy trap!

The initial ORGANON manager explained that the culture of informal communication was essential to instill teamwork:

Whenever I have an idea or a problem, I directly contact the person whom I think can help, no matter where they might be in CORP. If we feel it is necessary, we get a group of people together to work as a team. We do not have bureaucracy obstructing the constitution and functioning of the teams. And, most important, we trust and respect each others' knowledge.

ORGANON was geographically located close to telemarketing systems direction—TSD. This location turned out to be important for three reasons. First, being close to TSD allowed ORGANON employees to absorb some of the knowledge and experience from other groups of people working in a similar area. Second, this collocation created an environment in which they were constantly exposed to CORP culture. This was an important means of control that allowed the efficiency of operations and ensured consistency in customer service, which in turn, reinforced organizational culture. Third, the content of ORGANON operators' work was similar to that of the

TSD operators, in that they had to be commercially aggressive and could not attain a very personalized contact with the customer. Senior management perceived this way of organizing as resourceful and malleable enough to cope with the absence of formalized structures of organizing. They perceived an organizational chart as prescriptive, hence as a constraint.

MACHINA was located on the fourth floor of a building on the outskirts of the capital. Unlike ORGANON, MACHINA could already draw upon positive experiences from other CORP inbound and outbound call centers. Due to the physical distance of MACHINA from other areas of CORP and the initial premise that MACHINA was supposed to be a stand-alone bank, most of the cultural values of the group were not shared by MACHINA members. Being a member of the project team, in the case of MACHINA, meant participating in the last part of the project, just months before it started operating. People were only aware of some minor "adjustments" carried out concerning the technology before they entered and started training the newcomers. Because the telephone customer system (TCS) was developed for other call centers in the group, its specific developments for MACHINA were neglected. There was the belief that the knowledge required was already available, and that the process would be one of building on. For most people, the technology involved in MACHINA was perceived as a "turnkey solution" or "vanilla" implementation. Afterward, however, they had to adapt to a large number of unplanned aspects, notably concerning the technology and organization of work.

In sum, the location sowed the seeds for a supportive culture at ORGANON. The initial operators were recruited from TSD. At ORGANON, they simply needed to acquire procedural knowledge relative to the main system, and to enact work practices and create routines. These were based on some drifting, improvisation, and rearrangements of mobilization of knowledge resources from elsewhere, as one communicator explained:

We were already doing at least part of this job at TSD. Thus coming from outside it was not hard for any of the three initial operators to envision what to do and from where to mobilize the extra knowledge requested at ORGANON.

At MACHINA, the failure to implement the system may be attributed to a clash between the culture embedded in the technology and the actual culture of the implementing organization.

### Implementation Process

The adoption of a greenfield site strategy was a core design specification. The greenfield site philosophy/strategy is extrapolated here from new factory design to a new bank design because, in both cases, it calls for a "fresh start as a



pre-condition for implementing a new organizational model" (Patriotta, 2003: 74), where experience has a highly positive valence. In the present study, greenfielding stressed the experimental character of a "new bank" in a network of existing banks. It offered the possibility of designing and organizing work anew, as well as devising new ways of doing and seeing things. The design concepts of ORGANON and MACHINA embraced many of the ideas connected to the choice of a greenfield strategy.

ORGANON banking and telebanking services started in 1989 as a pilot site for telephone banking in the country:

There was no clear plan. As the project unfolded, at each point we were faced with a new set of possibilities and doubts. The relationship among us was excellent, and we were willing to work and think together. (ORGANON, Communicator)

The call center manager, while describing the implementation process, pointed out the dichotomy between technology and people. Furthermore, according to his perceptions, technology seems to have had a highly predictable, planned, and controlled trajectory, whereas the processes of organizing work were more emergent and based on a trial-and-error approach. When CORP launched ORGANON, the IT support was such that it effectively made every employee a generalist, thus increasing the flexibility and cost effectiveness of branches. As one ORGANON manager explained: "At ORGANON, everyone can do everything. Technology enabled us to use smaller units and smaller teams [than the branches]."

Hierarchically designed work was enacted by the increased number of workers and the management perception that the high levels of work motivation needed to be kept high. ORGANON has changed over time from being merely an informational support service to "full service." This made operators eager to understand the logic behind various procedures, including information seeking, industry developments, and the buildup of their work practices and routines.

Operators' jobs combine routine and nonroutine tasks. In the former case, they still had some discretion, because the technology could not cope with all the demands of the customers. By shifting and drifting inside the main system, the operators improvised. In the latter case, these nonroutine tasks were usually accompanied by management guidelines, which circumscribed employee discretion. At ORGANON, we observed opportunities of demonstrating initiative regarding problem solving and selling, and some managers encouraged employee participation in parallel team working projects. These teams were also a context for development of supervisor-communicator relations. Although operators are expected to answer incoming calls for approximately 80 percent of their work time, they have access to colleagues, from the first and second lines, to supervisors, and to their manager. Despite operators' cubicle walls and the preponderance of time spent

on customer business, they developed close informal relations and opportunities to seek out mutual support when risks had to be taken. A large number of operators referred to relations with coworkers as the best part of their job.

At MACHINA, the board of directors gave only very broad guidelines to Brain & Co., a multinational consulting company that participated in the design process: they wanted a highly competitive bank. This, in turn, was interpreted as a highly individualized work design by the consultants and enacted by operators in a way that was discouraging to informal relations from the beginning. Brain & Co. was in charge of the whole project; hence, the bank layout, design, division, and organization of work and technology were already set up, and none of the interviewees had any knowledge of how the implementation took place. All of the jobs at MACHINA were designed by Brain and Co. As opposed to what occurred at ORGANON, when the employees "arrived," all they had to do was to follow supra-imposed modes of operating and organizing. MACHINA followed the business group organizational structure. Technicians and managers argued that the project as a model was perfect, that everything fit, and all was clear and explicit: "The MACHINA idea is based on . . . or is a copy of First Direct [a UK benchmark]. . . . The project that Brain & Co. designed was not realistic, they were too optimistic" (Supervisor).

The communication area of MACHINA was confined to a room with little natural light, where the operators sat in cubicles divided by opaque, high partitions. This area was interconnected with other areas of the bank only through the supervisors or the communication area chief. Most of the operators were selected from the telemarketing division of CORP, where they had training in communication and service quality, and only then were they selected for "potential" customer service, eventually to become employees of the group when they became customer operators. Above customer operator, all of the others were recruited from within the group.

Supervisors were in charge of coordinating, monitoring, and following up with the teams. The supervisors gave training in technology to newcomers, although the technicians did not agree that supervisors had enough knowledge to do this satisfactorily:

The problem here is that there is no time to give proper training, in technology or in products. The supervisors do not have enough knowledge or qualifications to do it. The operators only learn how to move between screens. So I have to find ways to make them more autonomous. For example, they have checklists about how to solve the most common problems . . . but I admit that this made them lazy and devoid of any curiosity whatsoever. To be honest, why would they learn anything else if they are assessed only by average time spent on calls or the number of products they sell? (Technician)

Operators were mainly dependent on their supervisors for learning:

The supervisor gives support to his team and in some pre-defined situations he has decision power. His or her main task is to support and manage his team, in administrative matters. All the information that the clients want to pass to their hierarchy must go through the supervisor. (Communication Area Chief)

There was low learning interdependency among operators and the back office. They had very high task interdependency, combined with functional division of labor. The back office assumed a central place at MACHINA. Back-office personnel did not merely receive the unsolved problems from the communication area but also had to cross-check and validate all of the "solved" problems. Thus, communication workers depended on back-office personnel to approve their work. The relations between the communication area and back office were tense, despite (or perhaps due to) the little direct interaction among adjacent workers, given that supervisors and managers mediated relations with communication workers and the back office.

Technicians' work seemed to be highly valued by the hierarchy. Their knowledge only became relevant in practice in the light of a problem at hand, and as most problems involve unanticipated troubles, technicians felt that they had to piece together most of the information necessary for resolution from the situation.

The help desk gave technical support to all of the technologies available at CORP. ORGANON used the help desk whenever there was a technical problem that internal technicians could not solve. At MACHINA, the help desk was neither mentioned nor used. The reasons for this were twofold. First, once the technicians, supervisors, and customer operators received training in the central IT department from help desk technicians, the ones that had been trained believed that the help desk technicians would perceive them as unable to learn. There were no subsequent contacts between them. Second, denying the help desk's existence was an attempt to secure independence from CORP meta-structure, in order to preserve the status of being a "stand-alone" bank. Despite MACHINA's appetite for autonomy, for many situations, they still had to depend on the CORP branch network. Only one change took place inside the call center: the emergence of two new positions in the communications area, two hierarchy layers—operator supervisor and operator communication area chief.

The design activities did not give any clues to the MACHINA workers that helped them to define and delimit their possible courses of actions. There seemed to be only one possible right way. Learning-by-doing was not encouraged:

We lost or never had the synergy of belonging to a big company. We used only the parochial approach. . . . We recognized that we were not doing a good job. (Manager)

At ORGANON, workers were required to provide customers with detailed products and procedural information, to process customer transactions, and to respond to customer queries accurately and in a timely fashion. This knowledge had to be mobilized, either from coworkers or other firms of the group, and recombined. However, not only was it necessary to apply this knowledge in a different setting but the operators also needed to recombine their communication resources. Practice was a source and resource for enacting technology. Despite the emphasis on formal training, managers believed that the most appropriate way to train was on-the-job. Operators tended to agree: "The key to learning is the hands-on approach: talking to customers, reading material in the office, the product manual, and asking colleagues" (Second Line Operator). This type of learning increased their pool of resources that they enacted whenever a new problem arose or a new challenge was created, which kept their familiarity with resources high.

At ORGANON, supervisors could remotely monitor operators' performance, contact every communicator, intercept/appropriate calls, and provide real-time information on call center performance (number of calls in the queue and how long they had been waiting). Once first lines started working, the supervisor ensured the quality of operators' performance through call coaching. It obviously had a strong monitoring and control element, and it was also used for training purposes. Call monitoring was used as a vehicle for operators to learn and develop, and it served to transfer "appropriate" behavior and associate norms from supervisor or coworkers to operators. Therefore, call coaching had two objectives—discipline and learning: "People speak openly in coaching meetings. No threat or fear" (First Line Plus Communicator). At ORGANON, monitoring was perceived as a positive, constructive, and unobtrusive practice.

In order to evaluate the quality of the calls, two processes were used: the managers randomly selected some calls to discuss between a group of managers and operators, and used phone call monitoring, in which the manager listened in on a call and subsequently evaluated the quality of the interaction. The "pervasiveness" of these controls referred not only to the scope of the measures used but also to their transparency and frequency. Thus, despite the "pervasiveness" of IT-generated data, operators did not feel threatened by it because of the limited relevance of the data moderated by the facilitative supervision. Operators even perceived it as a challenge to improving their behavior and increasing performance.

The implementation of Agent Windows placed supervisors in the organizational role of limiting coworker interactions, for example, by stressing to operators the need to reduce call times via intercepting a call that was taking too long. The content of job and roles inside telebanking has tended toward more specialization, which can lead to a decrease of bricolage (Baker & Nelson, 2005). Electronic data was felt to be a fair



representation of their performance, and the metrics were not questioned. This is a kind of "safe enclave" (Hayes & Walsham, 2000), where there was interaction without fear of the higher-level monitoring.

At MACHINA, customer operators were aware that their output and performance were being monitored electronically. They were also confronted with prominent digital wallboard displays, making the number of stacked calls waiting to be answered highly visible. It was difficult for the operators to speed up, yet they were aware that a call must be terminated promptly in order to take the next one. As a result, it was common for people to say that "We are cannon fodder!" (Customer Operator), or "People here live with control in their heads!" (Technician). Operators felt under pressure and were constantly aware that the completion of one task was immediately followed by another. Some customer operators tried to circumvent what they perceived as unbearable levels of control. Hence, they developed noncanonical (Brown & Duguid, 1991) resistance routines to deal with the perceived inadequacies of formal ones. Operators were subject to continuous normative pressure to behave appropriately, and were constantly monitored to that effect. IT-generated information was the basis for control, complemented by direct control imposed by the supervisors. Some output measures were also used for campaigns. The use of IT-controlled measures enabled setting up surveillance imposed blindly on operators. The impact of this surveillance was experienced as a profound sense of self-defeat.

A number of interviewees reported being able, albeit to a limited extent, to disengage from the waiting queue calls, and we also observed the practice of individuals giving the impression of being engaged on a telephone call when, in fact, no interaction was taking place. Only individual forms of resistance took place in response to this deep self-defeating sentiment:

When I am really mad at work, I just pretend that I am busy talking with a client but I am actually idle. . . . I know the risk I am taking, but sometimes this is just unbearable.  
(MACHINA Communicator)

There are blind spots in the gaze of the electronic eye that can enable individuals to resist the rationalizing forces of surveillance (Sewell, 1998).

In most cases, tasks were completed individually and communication among coworkers was discouraged. Two aspects of work constrained coworkers' relations while working: the standardization of the tasks and information capacity of IT to regulate and circumscribe communicator behavior, whereby operators are evaluated according to how much time they spend on the phone. This meant little time available for communicating among coworkers, with an associated high chance of decreasing the quality of work. Even though the technology allowed extensive monitoring, it did not spell

the end of human supervision. That was why the additional level of supervision was created. Operator performance reports still needed to be interpreted by managers external to the communication area. The role of human supervision was equally obvious from the assessment of taped conversations. No electronic machine can summon the operator to a coaching session to point out the deficiencies of communication with the customer. The customer operator interdependency was low, and the supervisor–customer operator relations were hierarchical:

Here there is a lot of control by the team supervisor. Every week there is a team meeting to discuss various issues and to listen to some recorded calls. The machine also controls our telephone system and reads our daily reports on a daily basis.  
(Supervisor)

For some, the operator supervisor and area chief positions were created to be able to keep tight control over the operators:

In the previous structure, we had the customer operators, the supervisors, and three shift supervisors. One of these supervisors went to the back office and it was felt that there was no need for two chiefs, because the supervisors could do the chief's main work. As such, the area chief figure was created.  
(Manager)

In summary, the role of ORGANON shifted from simple inquiry handling to customer relationship management. Hence, work practices and routines were being designed and redesigned as the content of work changed: "The internal organization of [ORGANON] emerged and only after a while was it formally accepted by the bank" (Call Center Manager). The implementation and design process had an informal, emergent, and practical character. Technology had a highly predictable, planned, and controlled trajectory, whereas the processes of work organizing was more emergent. At ORGANON, people were able to balance structure with improvisation processes. When there were system errors or other types of unknown breakdowns in the workflow, operators typically consulted the supervisor or developed interim coping strategies with their peers while experts on that particular matter were solving the problem.

Despite knowing that they had these two types of backups, operators still enacted an improvisational solution, assembling their resources at hand:

When I told my friends that I was coming to work here, they were puzzled or even disappointed with me because they thought I was coming to hell. To be honest, I was a little skeptical myself . . . but I have been here for four years now. . . . I have learned a lot from everybody, I have used skills and knowledge that I have acquire from I don't know where. We are always teasing out one another to solve problems that we know can be solved by the central technicians . . . thus we make use of our amateur skills and sometimes in a very suc-

cessful way. I feel that my job is, in a way, always evolving.  
(ORGANON, First Line Plus Communicator)

ORGANON owed a lot to improvisation and bricolage because those were important processes through which knowledge was transmitted and meanings were “rented” by individuals (Holquist, 1983).

These processes were used because management had instilled learning behaviors that increased familiarity with resources and the way those resources were used. Through these processes, an enabling structure was enacted—that is, a structure that controlled without constraining. The extensive use of scarce resources enacted a culture of improvisation and the use of bricolage, which persisted, allowing, in turn, an emergent mode of organizing that perpetuated knowledge seeking behaviors among coworkers. The initial familiarity with resources that were available created a pool of practice-based knowledge and principles of organizing required to capture that knowledge. Thus, the skills for knowing (Schön, 1983) and making do with resources available or made available were developed (Lave & Wenger, 1991).

By contrast, MACHINA faced a number of challenges almost from day one. These included considerable IT problems, an inexperienced management team (which was mostly from the CORP branch network), and centrally determined human resource policies and procedures, which were inadequate to the particularities of telebanking. Workers at MACHINA did not have the possibility of borrowing the knowledge required to operate the technology, because they did not have the chance to participate in any social practice. Moreover, a strong competitive environment based on highly individualized job design existed, and informal communications were restricted. These aspects were reinforced on all fronts: a copy of First Direct in the United Kingdom, mixed with the modes of working and organizing that preexisted inside the group’s branches and an obtrusive IT-based control system. The workload was imposed by a manager outside the communication area, who, due to lack of knowledge of the workflow inside the communication area, set unachievable goals. The approach to organizing eliminated any common ground for developing skills for knowing and delegitimized practice by focusing on prespecified outcomes. All of these factors led to the imposition of rules of a coercive type. Information was not shared in this context of use, because social interaction inside the communication area was not possible. Therefore, common space for learning was never created.

## DISCUSSION

A first-order interpretation of our cases would lead us to a recurring theme in the literature: an enabling (versus coercive) structure emerged where there was more (versus less) lower-level participation and more (versus less) room to improvise

locally appropriate solutions. In this section, we compare and contrast the cases along the key theoretical dimensions that emerged from our research as being crucial to the differentiation of coercive and enabling structures. The first conclusion is that work in telebanking can be organized to capture and exploit knowledge that facilitates or hinders the establishment of enabling or coercive structures in a new telebanking operation. Despite the fact that the theory-in-use for designing new banks from CORP was a greenfield philosophy, when comparing them, ORGANON was a true greenfield site whereas MACHINA was a replica of preexisting templates (Nelson & Winter, 1982). Thus, in the former, the implementation of a new organizing model from scratch evolved and experiences were highly appreciated, whereas the latter was a greenfield site only on the surface. MACHINA resulted from a replica of First Direct, the branch organizational structure, and TCS customized for ORGANON.

Because MACHINA was another bank of the group, and not a mere additional service, management suggested a replication of the highly effective business model at the branch level. First Direct was the benchmark for stand-alone telebanking. Thus, in order to replicate its success, the management team went straight to an expert source—the company that designed that best-practice benchmark. The capacity of ORGANON to construct the set of interdependent work practices and routines regarding technology, to adjust and to fine-tune these routines by “doing,” were to some extent, an emergent phenomena, despite the constraints of the technology. Once the TCS was performing well in ORGANON, the group sought to replicate its success at MACHINA, expecting that little effort would be required to replicate or maintain its operation. The consulting company could not fully grasp the complexity of any of the three templates, less so the interconnections between them. Details of the system are inevitably invisible; individuals may know parts of it, some are learned without awareness, and others may be contextual. As Szulanski and Winter (2001) suggested, in order to replicate, one must keep only a single active template in mind, look at the ongoing activity, and copy the skill set of staff. This clearly did not happen in the case of MACHINA, because most of the consultants left before it started operating. Therefore, resistance against both management and consultants emerged, which, in turn, led to the unwillingness to cooperate or learn, internal competition, strained personal relationships, and concomitant low levels of trust and mutual respect. The staff from the two sites held different tacit beliefs about interpersonal threats, thereby giving rise to different levels of learning. This helped employees at MACHINA to experience work as coercive and alienating.

MACHINA adopted a “design precedes execution” approach (Baker, Miner, & Eesley, 2003), the design being a replica of multiple templates. Instead of creatively using resources through bricolage, a clear managerial goal envi-

sioned planning activities against which they subsequently attempted to execute, via the combination of the three templates, regardless of action. This approach works as an antipractice strategy that eliminates the common ground and delegitimizes the continued articulation of practice. At ORGANON, various behavioral alternatives were enacted: (1) invoking previously acquired knowledge and routines, (2) engaging in design and planning, and (3) improvising. At ORGANON, during the first implementation phase, there was neither much time nor much knowledge to plan ahead to obtain materials or resources. Design and execution were experienced as indistinguishably intertwined, occurring at about the same time. Hence, during the early days of ORGANON, a broad temporary use of bricolage took place. Thus, it was a highly improvisational endeavor with recurrent use of bricolage in attempts to generate a workable approach. Bricolage, or the flexible use of materials to address situated problems, facilitates learning through improvisational practice (Cunha & Cunha, 2007). In the second phase, a planned approach dominated but did not preclude the use of bricolage. We have reported cases of parallel bricolage where operators participated in different projects—namely, the design of a new advertising poster for the branches and the design of a Web page. Hence, more attention was directed at how the organization dynamically developed and took advantage of the available resources.

Dougherty (2004) pointed out the need to enact the activity of design and use in an interwoven way. Our cases are opposites, in that MACHINA showed that without this recursiveness of planning and bricolage, employees cannot make sense of their work organization. Without such recursiveness, employees would not have developed the perception that they participated in a process of implementation or cultivation. Thus, their ability to reflect-in-action was restricted. These activities sowed the seeds for a supportive improvisational culture to emerge. The ORGANON staff participated in the process of maturing the system, a process that was experienced as an enabling and empowering collective endeavor, which, in turn, triggered learning interdependencies, trust, and psychological safety (Edmondson, 1999). For example, sharing information, asking for help, and experimenting were common behaviors at ORGANON. Psychological safety is a shared belief held by group/organization members that the group/organization is a good place for personal exposure and interpersonal risk taking. It is associated with learning behavior, and due to the unpredictability of events and the need for fast action, it is necessarily associated with improvisation and bricolage. Our cases reinforce the idea that individuals are more willing to improvise and engage in the practice of bricolage when they feel psychologically supported by the group (Edmondson, 1999). MACHINA was a psychologically harsh environment,

with staff making constant use of their hierarchical position, established routines, and risk-free procedures, and adopting individual defensive behaviors. Our cases also suggest that the generation and maintenance of a supportive culture is not primarily a technological issue. Coworkers' perception of the freedom to learn or the willingness to share knowledge is a reflection of management practice. An integrated approach to sociotechnical system development and use is very important, but it is only likely to be successful in a context that encourages and nurtures learning in practice.

Another major conclusion is that preexisting conditions were required for the occurrence of bricolage in telebanking. We already underscored the importance of bricolage and pinpointed some of the conditions required for it to occur. In this section, we try to deepen the meaning of some of these conditions and expand them. Improvisational cultures have been defined as those that value experimentation, learning, willingness to take risks, and trial-and-error evolution (Cunha, Cunha, & Kamoche, 1999). Confronted with the urge to solve problems, people may have to use the available resources, which may not necessarily be the best ones. However, our cases revealed that there are preconditions for such a culture to develop. At ORGANON, cross-functional projects, in which each team member had to search for knowledge combinations beyond his or her job boundaries, allowed bricolage to flourish. From experience, knowledge is acquired. This practical knowledge of existing resources allowed people to judge their potential for use in novel ways. The number of potential outcomes increases. That is, the recursive process will reach the ideal of bricolage to the extent that the organization enables the combination of available resources.

People in organizations are often reluctant to ask for help, even when doing so would provide benefits to the organization/team. They tend to act in ways that inhibit learning when facing the potential of threat or embarrassment (Argyris, 1982). MACHINA's refusal to contact IT central services for help evidences this pattern of behavior. Interpersonally threatening issues impede learning behavior (Argyris & Schön, 1978). The two groups hold different tacit beliefs about interpersonal threat, thereby giving rise to different levels of learning. Two structural characteristics played a major role—supervisory behavior and a context supportive of experimentation. At ORGANON, supervisors and managers were perceived as supportive, coaching oriented, and reassuring. As one ORGANON operator reported:

We trust pretty much in each other. Together we have a very good knowledge of our business, there is almost no status difference between functions here, thus we feel free to, and have no problem in, putting oneself "on the line," such as by asking questions to the supervisor or manager, reporting a mistake, or proposing a new idea.

This led members to perceive that ORGANON was a safe environment. Because, at MACHINA, managerial history was associated with acting in authoritarian ways, employees felt reluctant to engage in the interpersonal risk involved in learning behaviors. Instead, they recurred to the hierarchy, established routines, and defensive behaviors.

Another structural characteristic that may facilitate bricolage is the way workers psychologically enact and make sense of the processes of control and surveillance—that is, how these processes shape the subjectivity of people at work. In both settings, operators have the number of closing deals scrutinized, as well as the time it takes to complete the transaction and to have the transaction recorded. At ORGANON, the impact of surveillance and control, especially its ability to instill a profound sense of self-discipline and self-control, was so subtle that it went almost unnoticed. The information obtained through managerially controlled surveillance, combined with a supportive culture, established unobtrusive controls (Sewell, 1998). At MACHINA, discipline was exerted by high surveillance and monitoring held by direct face-to-face supervision, strictly designed tasks, metrics on the edge of full potential working power, and the use of all available means throughout the workday, to make sure that the metrics were achieved via obtrusive controls. In a harsh environment, these visible control mechanisms hinder emergent behavior and discourage the nontraditional use of materials because they direct employee behavior, reducing the sense of mastery and autonomy necessary for bricolage to occur. Sharing a set of values combined with a supportive culture is a powerful nonobtrusive control mechanism, allowing bricolage to flourish through the stimulation of personal involvement and initiative.

Our findings should be further validated in other types of call centers and organizations. In order to test the significance of the findings, quantitative measures of psychological safety, improvisational culture, and resource familiarity should be used to look for their statistical causality. More systematic research in different types of organizations needs to be conducted to clarify the role of resource familiarity in the process of development of new organizations. This study suggests that practice-based knowledge, enacted through improvisation and bricolage, should have more legitimacy in strategic organization theory and in the development of cultures of initiative.

### CONCLUSION

We suggested that the way the process of organizing initializes may be dependent on how technology is presented—as a black box, closed to inquiry and discovery, or as an object to be explored, tested, stretched, and incorporated in activities of bricolage. As Vann and Bowker (2001) suggested, organization knowledge is both a result of fixed hierarchy and fluid

emergence. The cases explored here indicate that these two processes may develop different trajectories even inside the same institutional context. In some cases, the fixed hierarchy may impose a certain path, whereas, in other cases, it is the fluid emergence that imprints the future of the organization.

Our cases have similarities with previous work on the dynamics of organizing. For example, the fundamental role of resources and bricolage in the process of constituting the organization was observed by Baker and Nelson (2005). This observation is in line with research (e.g., Quattrone & Hopper, 2006) that shows that technology is not a black box that imposes itself upon users but rather a heterogeneous object amenable to multiple appropriations. Different forms of appropriation may lead to distinctive paths of organization—organic growth or mechanical assembly, to use the notions advanced by Brown and Eisenhardt (1998). The distinction between emergent and planned approaches to organizational design was clarified by Garud and Karnoe (2003). We found that these patterns may be the result of the way technology is presented to people, as open to exploration or as a closed factor of production. We verified that even in the same institutional context, different beginnings are possible, with the implanted “best practice” leading to poorer results.

The study suggests that the way organizations get started may be a consequence of the familiarity of people with resources and of the way they are willing to openly use those resources for exploratory purposes, rather than with closing technology to the imagination and the ingenuity of people.

### NOTE

1. Names of the organization and its members are disguised to preserve confidentiality.

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