

# The Social Life of Information

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## CHAPTER 4

# Practice Makes Process

*A company must continue to focus on its processes so that they stay attuned to the needs of the changing business environment. . . . A process-centered organization must strive for ongoing process improvement. To accomplish this, the company must actively manage its processes. Indeed, we can now see that the heart of managing a business is managing its processes: assuring that they are performing up to their potential, looking for opportunities to make them better, and translating these opportunities into realities.*

—MICHAEL HAMMER, *Beyond Reengineering*<sup>1</sup>

BY THE LATE 1980S the cumulative effects of the productivity paradox, the dramatic changes fostered by information technology, the general slowdown in the economy, and the rise in global competition were making business life hell.<sup>2</sup> It was clear that current organization structures were not producing a “virtuous circle” between investment and production. But few could imagine what the right organization structure might be.<sup>3</sup>

The pressure to do something, anything, gave birth to innumerable fashions and fads in management. Consultants firmly

told managers how to run their businesses. Many of their imperatives, however, had people running in circles or opposing directions. Focus only on quality, on customer satisfaction, or on shareholder value, some said. Pursue core competency or diversification. Internalize, internationalize, divest, or merge. Integrate backward, forward, or outsource. Go hollow, flat, or virtual.

One of the many virtues of "business process reengineering," by contrast, was that it was clear, direct, and consistent. Michael Hammer and James Champy developed reengineering in response to "the crisis that will not go away."<sup>4</sup> It presented a clear antidote to organizational inconsistency, inertia, and gradualism. Reengineering manifestos assumed that business organizations were similar to other bureaucracies. Over time, they come to serve themselves first, customers and investors next. As a consequence, established businesses are rife with divisions and diversions that drain resources but, from the customer's point of view, add no value. Taking "a clean sheet of paper," reengineering teams were told to reorganize their organizations around the processes that did add value, making these the center of the new organization.

With this sharp distinction between value-adding and non-value-adding processes, reengineering insisted on sweeping away old practices. "Forget all you know," managers were told. "Don't automate, obliterate." Like all organizational fads, it also puffed itself up with some grandiose claims. Hammer and Champy, for instance, insisted they were transcending Adam Smith, one of the most enlightened thinkers of the eighteenth century and a pervasive influence on modern economics.

Slogans aside, there was enough substance for reengineering to acquire an impressive following. Hewlett-Packard, AT&T, IBM, Xerox, Ford, NYNEX, Seagram, and a host of other corporations

great and small reengineered. Soon, 50 percent of Fortune 500 companies had vice presidents of reengineering.<sup>5</sup> Results, too, were impressive. Reengineering seems to have been behind the transformation of several dinosaurs of the industrial age into phoenixes for the digital age (see chapter 1).

Nonetheless, by the mid-1990s, reengineering's stock was plummeting. Some critics claimed that this "pernicious panacea" never came close to the results promised (such as a 75 percent drop in overheads).<sup>6</sup> Moreover, while the changes in output were often trumpeted, they were not always set against the costs of input.<sup>7</sup> Other critics claimed that reengineering was obsessed with technology, to which reengineered firms became subservient. And for many people, *reengineering* was little more than a euphemism for downsizing.<sup>8</sup>

As reengineering stumbled, reengineering consultants themselves began to be downsized. They received little sympathy from those who had seen reengineering as a consultant's mint. (A senior partner in Andersen consulting apparently intoned, "God Bless Mike Hammer," as company revenues reached \$700 million.)<sup>9</sup> They probably needed little sympathy, for many moved swiftly across the hall to the suites reserved for the next fashion, "knowledge management."

This succession strikes us as particularly interesting. Was it merely a case of a new fad fortuitously and fortunately succeeding an exhausted old one? Or was there, perhaps, more than chance to the sequence? Did the focus on process, perhaps, overlook the increasing demand for knowledge in modern organizations? We suspect it did. Consequently, looking at reengineering in the light of knowledge, as we do here, may help reveal both the strengths (often hidden behind catcalls) and the weaknesses (equally hidden behind cheerleading) of reengineering.

### PERFECTING PROCESS

It is perhaps significant that many of the celebrated cases of business process reengineering come from a fairly narrow band of operations. Procurement, shipping and receiving, warehousing, fulfillment, and billing are favorites. These generally account for the most impressive results, with inventories transformed into just-in-time delivery, fulfillment and billing accomplished in days rather than weeks.

In these areas of work, processes are relatively well defined. They usually have clearly measurable inputs and outputs. And, as we might expect from a process-oriented view, they emphasize a linear view of how organizations work. To complete a process, something passes from *A* on to *B* ending with *C*—from, for example, receiving to manufacturing to shipping. In such well-defined processes, it is the “longitudinal” links between each stage that appear to matter. Lateral ties among people doing similar tasks—among, for example, the people in shipping—appear at a heavy discount from a process-based perspective. They are generally regarded as non-value-adding.

Consequently, with regard to information, reengineering directs attention to the information that flows across longitudinal links. This information helps to coordinate the complementary activities that make up a firm’s critical process. So, for example, the sociologist Charles Sabel stresses how just-in-time processes both require and generate “a rich flow of precise and targeted information about what was happening throughout the production process.”<sup>10</sup>

Such a focus is undoubtedly invaluable for organizations. Nonetheless, focusing on longitudinal process and the information that goes with it may lead to tunnel vision. Although

reengineered organizational charts may happily represent organizations in terms of these types of process, neither linear processes nor charts encompass all that goes on in organizations.

It is not surprising, then, that business process reengineering has had less success in the parts of organizations that are less linear and less clearly defined by process and information. Management, for example, has proved notoriously hard to reengineer. So has R&D. In such areas, life is less linear; inputs and outputs are less well defined; and information is less “targeted.” These are, rather, areas where making sense, interpreting, and understanding are both problematic and highly valued—areas where, above all, meaning and knowledge are at a premium.

### MEANING AND ENDS

Process perspectives are not necessarily indifferent to meaning. James March, one of the preeminent figures in organization studies, sees a close link between the two. “It is,” he argues, “process that gives meaning to life, and meaning is the core of life.” For March, however, “Outcomes are generally less significant . . . than process.”<sup>11</sup> Curiously, reengineering tends to see things the other way around. It focuses most heavily on the input and output of the stages in a process. It is relatively indifferent to the internal workings of these stages—to the particular practices that make up a process and the meaning they have for those involved.

Given this indifference, it was perhaps inevitable that studies of workplace practice, of the internal life of process, would reveal tensions between the demands of process and the needs of practice. Nor is it surprising that these tensions are often the result of struggles over meaning. These struggles, furthermore,

are not confined to the “thinking” parts of organizations. They occur throughout, pitting the process-focused need for uniform organizational information against the practice-based struggle for locally coherent meaning.

Etienne Wenger, formerly of the Institute for Research on Learning, revealed this tension, for example, in his study of the comparatively “lowly” and well-defined process of claims processing.<sup>12</sup> He found that many of the problems faced by the health-insurance claims processors he studied could be traced to clashes over meaning and sense making—over such things as what a form signifies, why similar claims elicit different reimbursements, and who does or does not qualify for reimbursement. In the end, these problems for the claims processors create problems for the company.

To do their job, processors need to be able to make sense of what they do. The company offers explanations. But, from the processors’ point of view, the organization’s information and explanations are difficult to use. They explain things in terms of the company’s overall goals and processes, but they take little account of the immediate practicalities of the claims processors’ work. Indeed, many of the company’s explanations have the ring of those parental imperatives that skip explanation and simply say “Do it this way because I say so.”<sup>13</sup> Such imperatives make life easier for the company, but difficult for the processors, who need to understand what they do to do it well and also must justify their actions to customers.

Wenger’s work reminds us that, while process is clearly important to the overall coherence of an organization, in the end it is the practice of the people who work in the organization that brings process to life, and, indeed, life to process. Organizations, then, should not attend to the process and process-related explanations

only. They must also attend to practice. By practice, of course, we do not mean the sort of rote exercises people associate with phrases like *piano practice*. Rather we mean the activity involved in getting work done—the sort of activity that lies at the heart of medical practice or legal practice, for claims processors are practitioners of their own craft just as doctors and lawyers are practitioners of theirs.

#### LOOKING THE OTHER WAY

These two aspects of organizations, one process based and the other practice based, not only look from different directions—from outside a process and from within—they also look in different directions for the resources for understanding. From outside, people find meaning in functional explanations. They rely on process-based, cross-functional, longitudinal accounts of why things are done. From inside, people take a lateral view. The claims processors, for example, look less to their superiors or to the people to whom their work goes next than to their peer group for explanations of what they do and why. For them, knowledge comes more from fellow practitioners than from cross-functional connections.

These contrasting sources of meaning and understanding present business process reengineering and process views of organization with difficulties for several reasons. First, business process reengineering tends to be somewhat monotheistic. There is not much room for variation in meaning in its camp. The process view is expected to explain all.

Second, despite talk of rebuilding from the bottom up and empowerment, business process reengineering tends to be relentlessly top down. Indeed, some suggest that it is of necessity

a top-down, command-and-control procedure.<sup>14</sup> (It is not surprising that one of the most enthusiastic and successful reengineers has been the army.) Together, these two biases of business process reengineering make it hard to see and harder to understand the needs of people whose practices make up processes.

Third, the top-down view tends to give a bloodless account of businesses, as the quotation with which we opened this chapter suggests. Reengineering begins with processes into which people are then inserted as needed. "Process owners," as Hammer puts it, "are focused on process, not on personnel."<sup>15</sup> Personnel, for their part, seem to face the option of getting on board or getting out. Opportunities for them to craft, change, own, or take charge of process in any meaningful way are limited.<sup>16</sup> While lip service is paid to them, improvisation and "local" knowledge have little place in these schema, particularly if they challenge the coordination of process.

And fourth, business process reengineers tend to discourage exactly the sort of lateral links that people pursue to help make meaning. Focused on longitudinal cross-functionality, they dislike, and often try to discourage or even disempower, occupational groups, job categories, and local workplace cultures. Encouraging cross-functional links between occupations, business process reengineering tends to see the contrasting links within occupational groups as non-value adding. Here, then, we see in another form the problems that beset the worker at home alone, which we discussed in chapter 3. Focusing on individuals, process accounts overlook social resources that people in similar occupations provide one another. Tunnel-visioned process accounts rarely understand the importance of these resources. (In an exemplary piece of partial blindness, for example, British Telecom did notice the damaging isolation of its

home workers. As a remedy, however, it decided to pipe the sound of canned background chatter into their home offices.)<sup>17</sup>

These four biases, as we said, make it difficult for business process reengineering to deal with practice. Yet the tensions between process and practice, between the structure provided by one and the spontaneity provided by the other, are key structuring forces in an organization. Consequently, you can't redesign process effectively if you don't understand practice.

### REPRESENTING PROCESS

Let us take an example of the contrasting perspectives of process and practice at work. Results from a study by Julian Orr, an organizational consultant and former colleague at Xerox PARC, help clarify what is missing from the process-centered perspective.<sup>18</sup> An anthropologist, Orr studied the Xerox technical representatives (reps) who service and repair the company's copiers at customers' sites.<sup>19</sup> The reps' work is critical to the company's overall purpose and so falls well within the class of value-adding processes. Nonetheless, as Orr found out, the reps might almost be said to succeed despite the company's best intentions. Their success is in good part a triumph of practice over the limits of process.<sup>20</sup>

As a process with clear input and output, the repair work Orr studied could be described easily. Customers having difficulty called the Customer Service Center. This in turn notified the reps. A rep would then go to the customer's site, identify the problem with the help of the machine's error codes, find the right response from the machine's documentation, and, having fixed the problem, "clear" the call with the service center.<sup>21</sup>

The company tried to provide the reps with the targeted

information they would need. First, it provided training courses to familiarize new technicians with the company's machines and to familiarize established technicians with new machines. Second, it provided them with documentation to do the job. This "directive" documentation provides a map to repair work, with directions guiding the rep from problems (which appear as error codes in the machine) to repair solutions. Through these courses and documents, the reps gathered the information that, from the company's perspective, is needed to see the process from beginning to end.

#### UNDERSTANDING PRACTICE

Given this clear view of the process, Orr's voyage into the reps' world seemed superfluous to some colleagues when he embarked on it. Everyone knew what reps did. But Orr argues forcefully that work is rarely well understood. Neither management nor management theorists, he points out, are adequately "concerned with work practice," by which he means they "do not focus on what is done in accomplishing a given job."<sup>22</sup> He was not surprised, then, to find that what looked quite clear and simple from above was much more opaque and confusing on the ground. Tasks were no longer so straightforward, and machines, despite their elegant circuit diagrams and diagnostic procedures, exhibited quite incoherent behaviors. Consequently, the information and training provided to the reps was inadequate for all but the most routine of the tasks they faced. Although the documentation claimed to provide a map, the reps continually confronted the question of how to travel when the marked trails disappeared and they found themselves surrounded by unmarked poison oak.

For example, in the process view, machines work quite predictably.<sup>23</sup> A part malfunctions. The malfunction produces an error code. And the error code leads, by way of the map, to a solution. Yet large machines, comprising multiple subsystems, are not so predictable. Any one machine may have profound idiosyncrasies, for each inevitably reflects the age and condition of its parts, the particulars and patterns of use, as well as the distinctive influences of the environment in which it sits—hot, cold, damp, dry, clean, dusty, secluded, in traffic, and so forth. (Reps know the machines they work with, Orr suggests, as shepherds know sheep. So, while everyone else assumes each machine is like the next, a rep knows each by its peculiarities and has to sort out general failings from particular ones.) All this undirected machine behavior inevitably undermines the very premise of directive documentation.

Anyone who has had trouble with a piece of information technology (surely that is everyone who has a piece of information technology) has trawled through manuals and indexes and help systems and never found the problem in front of him or her described. All, too, probably know the frustration of "FATAL ERROR!" messages that no one, not even the people in customer service and tech support, can explain.<sup>24</sup>

The reps' real difficulties arose, however, not simply because the documentation had lapses. They arose more problematically because it told them what to do, but not why. It gave instructions, but it didn't explain. So when machines did something unpredicted, reps found themselves not just off the map, but there without a compass or tools for bushwhacking. At this point, reps needed to bridge the gap between the limits of prediction and reality. In short, they needed to make some sense of the machine in order to fix it. Directive documentation, however,

wasn't designed for sense making. It was designed for rule following.<sup>25</sup> So, Orr found, when the reps fell off the map of process, they went to breakfast.

#### WHEN THE GOING GETS TOUGH

Orr begins his account of the reps' day not where the company process begins—9 o'clock at the first call—but at breakfast beforehand. From a conventional perspective, the reps' job was highly individual. There was a "team" that covered the same geographical area (though individual reps carry the responsibility for specific accounts), and there were specialists whom a rep could call on if he or she got into difficulties. Routine work was carried out alone, however, at the customer's site. Yet Orr found that the reps were remarkably social, getting together on their own time for breakfast, lunch, coffee, or at the end of the day—and sometimes for all of the above.

This sociability wasn't simply a retreat from the loneliness of an isolating job. At these meetings, while eating, playing cribbage, and engaging in what might seem like idle gossip, the reps talked work, and talked it continuously. They posed questions, raised problems, offered solutions, constructed answers, and discussed changes in their work, the machines, or customer relations. In this way, both directly and indirectly, they kept one another up to date with what they knew, what they learned, and what they did.

The constant exchanges the reps engaged in are similar to the useful background updating that goes on constantly in any ordinary work site where people simply become aware of what others are up to because it's evident. There, too, this sort of chat usually passes unnoticed unless someone objects to it as "time

wasting." Yet, though only a fraction may involve directly informing others about explicit business matters, this talk is valuable. Chat continuously but almost imperceptibly adjusts a group's collective knowledge and individual members' awareness of each other. Providing information directly is a little like the chiming of an alarm clock. This constant chatter is more like the passage of the sun across the sky, a change hard to see directly yet one that continuously reorients people to the progress of the day.

The reps' chatter stood out, however, because the process view assumed that they worked alone and had adequate resources in their training, tools, and documentation. Time spent together would, from the process perspective, be non-value adding. It might at best be the sort of problem someone might try to remedy with British Telecom's canned chatter. But, as Orr showed, the reps provided much more than comforting noises. They were critical resources for each other. The informal and extracurricular group helped each member to reach beyond the limits of an individual's knowledge and of the process documentation.

#### THE PRACTICE IN THE PROCESS

Not all problems, however, can be solved over breakfast. One day, Orr studied a rep at work with a finicky machine. It had been recently installed, yet never worked satisfactorily. Each time it failed, it produced a different error message. But following the prescription for each report—replacing or adjusting parts—didn't fix the overall problem. And collectively, the messages made no sense. The rep's path to a solution, then, shows how people do explore territory when they fall off the maps that process provides.

Having reached his limits, the rep summoned a specialist. But the specialist could not understand what was going on either. So the two spent the afternoon cycling the machine again and again, waiting for its intermittent crashes and recording its state at the time. Simultaneously, they cycled stories about similar-looking problems round and round until these stories, too, crashed up against the peculiarities of this machine. In Orr's account, the afternoon resembles a series of alternating, improvisational jazz solos, as each took over the lead, ran with it for a little while, then handed it off to his partner, all against the bass-line continuo of the rumbling machine until finally all came together.

For in the course of the afternoon, the two gradually brought their separate understandings closer together and simultaneously came closer to a collective understanding of the machine. Eventually, late in the day, the different cycles achieved collective understanding. The machine's previously erratic behavior, the experience of the two technicians, and the stories they told finally formed a single, coherent account. They made sense of the machine and as a result could fix it and satisfy the customer.

In approaching the machine this way, these two reps were traveling off road and without maps, but they got to where they needed to go, nonetheless. We can understand this journey better by approaching it in terms of collaboration, narration, and improvisation.

### *Collaboration*

The reps' practice involved both collaborative problem solving and collective sharing in the solution. The end result, the final insight of the particular problem-solving episode we described,

became available for all the area's reps to draw on. Orr later heard a group discussing the story in the course of a long cribbage game.

In chapter 3, we discussed individualized work in terms of "displacement." There we argued that tasks better shared are often pushed into the lap of individuals, in the name of "empowerment." Orr's study suggests that a process view of work can result in similar displacement, cutting off lateral ties in the name of cross-functional efficiency. The result is quite disempowering and inefficient, burdening people with individual responsibility that is better shared by the group. The reps responded by developing their own lateral ties, drawing on their peers in their occupational community.

Some of these ties are company sanctioned. The reps, for example, filled in for one another as they were needed. But their collaboration was evident in other, less clearly approved ways. For instance, the reward structure made it difficult for each rep to hold expensive parts critical for certain types of infrequent failure. Reps (and the company's) relations with customers, however, suffer if too long a delay occurs between identifying the problem and providing the part to fix it. To get around this problem, the reps implicitly formed a collective pool of parts, so that each could draw readily on the other in times of need, and the necessary parts were always available.

More important, the reps also developed a collective pool of knowledge and insight on which they drew. Where, then, the reps may have had similar cases of tools, their knowledge in some way resembled the pool of parts they held collectively. All contributed from personal stock, and there was a great deal of overlap, but each had his or her strengths, which the others recognized and relied on.

We advance this analogy with some hesitation. Shared knowledge differs significantly from a collective pool of discrete parts.<sup>26</sup> In this pool of knowledge, where one person's knowledge ends and another's begins is not always clear. In the example we gave above, it took the collaboration of the two technicians working together to come to a coherent conclusion. But neither had a decisive "piece" of knowledge. Nor was the final solution the property of either one. It was a collective process that created an indivisible product. Thus we tend to think of knowledge less like an assembly of discrete parts and more like a watercolor painting. As each new color is added, it blends with the others to produce the final effect, in which the contributing parts become indivisible.

### *Narration*

Narration is another key, if unexpected, aspect of the reps' approach. The constant storytelling—about problems and solutions, about disasters and triumphs, over breakfast, lunch, and coffee—serves a number of overlapping purposes.

Reps tell stories about unsolved problems in an attempt to generate a coherent account of what the problem is and how to solve it. They may do this individually, putting their own story together. Or they can do it collectively, as they draw on the collective wisdom and experience of the group.

Stories are good at presenting things sequentially (this happened, then that). They are also good for presenting them causally (this happened because of that). Thus stories are a powerful means to understand what happened (the sequence of events) and why (the causes and effects of those events). And so storytelling is indispensable for the reps for whom what and why are critical matters yet often hard to discern.<sup>27</sup>

More generally, people tell stories to try to make diverse information cohere. Economists tell stories in their models, scientists tell stories in their experiments, executives tell stories in their business plans, lawyers tell stories in their briefs, and so on. Indeed, the business processes written down on Hammer and Champy's blank piece of paper are another example of storytelling.

Stories, then, can be a means to discover something completely new about the world. The value of stories, however, lies not just in their telling, but in their retelling. Stories pass on to newcomers what old-timers already know. Stories are thus central to learning and education, and they allowed the reps to learn from one another.<sup>28</sup>

Stories, moreover, convey not only specific information but also general principles. These principles can then be applied to particular situations, in different times and places. So the reps find that they carry back what they have learned from their colleagues in the coffee shop to a different site and a different problem.

While it may appear at first that the reps used stories to circulate information, they were actually doing much more. For it is not shared stories or shared information so much as shared interpretation that binds people together.<sup>29</sup> In their storytelling, the reps developed a common framework that allowed them to interpret the information that they received in a common light. To collaborate around shared information you first have to develop a shared framework for interpretation. "Each of us thinks his own thoughts," the philosopher Stephen Toulmin argues. "Our concepts we share."<sup>30</sup>

Learning to tell their war stories, then, was a critical part of becoming a rep. It allowed newcomers to see the world with a rep's eyes. And it allowed all to share in their major resource—their collective, collaborative wisdom. "When technicians gather, their conversation is full of talk about machines," Orr concludes,

*This talk shows their understanding of the world of service; in another sense, the talk creates that world and even creates the identity of the technicians themselves. But neither talk nor identity is the goal of the technicians' practice. The goal is getting the job done.<sup>31</sup>*

### *Improvisation*

As we hoped to indicate with our jazz metaphor earlier in this chapter, the reps' work has a clear improvisational component. Though they are supplied with routines and information, they have to rely heavily on improvisation to close the gap between the world as they find it and the inevitably limited model of that world embedded in routines and processes.

People in organizations continuously wrestle with the problem that, while their organization may be a haven of routine, the rest of the world is not. Part of the skill of work, all work, then is *routinization*, adapting the particulars of the world so that they fit within the general schemas of the organization. The gap to be bridged lies between reality and process, and it is bridged by the improvisation inherent in practice—so deeply inherent that the practitioners themselves are barely aware of it.

This adaptation is aptly reflected in the wonder (and the problems) of forms.<sup>32</sup> Forms are the crucial means by which an organization brings the heterogeneous world into line with its processes. Consequently, you don't get very far into an organization until you fill out the forms or answer the questions—in short, till you make yourself formulaic. Everyone knows what it is like not to fit within the standard form that gets things going.<sup>33</sup> And everyone knows, too, the value of the skilled representative who understands how to fit you into the form and the firm without causing problems for either. ("We'll just leave

that box blank, but we'll put a check down here, even though it doesn't apply, because that will ring a bell in accounting, and then they will know what to do.") Such gap-closing improvisation is one example of what another former colleague and organizational ethnographer, Lucy Suchman, describes as "endless small forms of practical 'subversion' taken up in the name of getting work done."<sup>34</sup>

### PROCESSING

In providing standard output, routines permit the ready coordination of business processes. Consequently, organizations have a heavy investment in routine behavior—it is the key to orderly process, to process improvement, and to process coordination.<sup>35</sup>

On the other hand, to survive in a changing world, organizations also need to improvise, to break routine by trying new things, exploring new regions, finding new markets, developing new models. Improvisation, however, inevitably disrupts routine. Consequently, all organizations have to balance routine and improvisation.<sup>36</sup>

Some people—those in R&D or in business planning, for example—are expected to improvise. Others, like the reps, are not. In general they are expected to do things the organization's way. There are penalties—formal and informal, explicit and implicit—for those who don't follow routines, don't carry out processes as defined. Such pressures produce what we think of as *processing*. These are attempts to disguise unauthorized behavior so that it looks authorized, to justify improvisation in terms of routine. Employees negotiate the gap between their actual practice and recognized routines and process by making the former appear to be the latter.

In all walks of life, processing provides a screen between what people do and what people say they do. It helps turn unauthorized practice, however effective, into authorized routine, however inept. It makes us all appear "rational" and rule governed to the world, even though a great deal of what everyone does is, of necessity, guesswork and intuition.<sup>37</sup> Most people, indeed, are not even aware of the implicit improvisation they engage in to bridge the gap between these two. They simply assume that what they do and what their job description says are one and the same. People thus keep their own skills hidden even from themselves. (Even braggarts usually brag about the wrong things.)

Back to our example, the reps actually improvised at a couple of distinct points in their work. First, they improvised to close the often-wide gap between machine behaviors and their own understanding. This required skill and collaboration, but these generally passed unnoticed and unappreciated in good part because, second, the reps disguised this improvisation through a little improvisational processing. They made it look as though they performed according to plan.

Directly or implicitly, organizational routines and processes encourage this sort of processing. In doing so, organizations make themselves blind to what lies outside the narrow tunnel of process. Improvisation, for example, can be a useful indicator of problems or change in the environment. The greater the improvisation, the less adequate the routine. But routines and processes encourage employees to hide their insights and improvisations. So, by subordinating practice to process, an organization paradoxically encourages its employees to mislead it. Valuing and analyzing their improvisations, by contrast, can be highly informative. Indeed, it's been suggested that Xerox stumbled so badly in the 1970s in part because it failed to gather evidence of poor quality

from its field representatives. This sort of self-deception is, we suspect, especially acute in organizations who focus on process, unreconstructed or reengineered, and the information it provides to the exclusion of all else.

#### LATERAL THRUST

We have described the process view as a "longitudinal" view. It seeks to overcome divisions of labor and establish cross-functional links. As such, its goals are admirable. Business processes provide the backbone of organization, structure amid the spontaneity of practice. But in pursuit of this backbone, business process reengineering has generally been indifferent to practice and even hostile to the solidarity of occupational groups and occupational cultures. *Specialist* in Hammer and Champy's work is almost a term of abuse.<sup>38</sup> Lateral ties, ties that do not follow the lines of process, are readily dismissed as "non-value adding."

Yet research into work groups, like research into the difficulties of home working (see chapter 3), suggests that people rely heavily on lateral, occupational ties to overcome the limits of process-based information. Peers, engaged in parallel not sequential practices, provide valuable resources for each other.

As a result of Orr's work, rather than trying to support the reps with yet more information from outside the reps' community, Xerox turned instead to reinforcing internal ties. The first step was simple. Reps were given two-way radios, which allowed them to continue to talk to one another even when working apart. This intervention both supported and acknowledged the reps' ways of collaboration, narration, and improvisation.

The second step was more ambitious, but it too reflected the resources the reps provided for themselves and tried to amplify

this resourcefulness. Though passed on in war stories, the insight reps developed in the course of their work tended to have a short reach, traveling primarily in local groups, and a short life, fading from memory even locally. Consequently, reps near and far ended up reinventing fixes that might have been known elsewhere. The Eureka project set out to create a database of this useful knowledge, preserving over time and delivering over space resourceful ideas.

Of course, a database for technical information is not in itself original. But most such databases are, like the reps' documentation, top-down creations. People who are not themselves reps usually fill these databases with what they think reps ought to know. (In this way, databases resemble those "FAQ" sheets found on the Web, which the designers fill with their ideas of what their public should know.)<sup>39</sup> Eureka was designed differently, however. It drew directly on the reps own insights and their own sense of what they needed.

Of course, such a database would be no use to anyone if it filled up with everybody's favorite idea (which is exactly why the Web can be so hard to use). Such a database must be selective. But again it would be a mistake to filter these from a top-down, process perspective. Instead, as with scientific articles, the reps' tips are subject to peer review, drawing on those same lateral ties that make the reps resources for one another. A rep submits a tip, peers review it, and if it stands up to scrutiny—is original, is useful—then it is added to the database. There, other reps can find it over Web-based links.

For the reps, this database has become more than an indispensable tool (reckoned to save the company up to \$100 million per year in service costs). It is also a recognition of the value of their own knowledge and knowledge creation, which was previously

disregarded by most of the corporation. And it is a means by which individual reps build social capital and recognition among their peers. At a recent meeting of reps in Canada, a rep who provided highly useful tips was given a standing ovation by his peers.

Identity, as we argue in chapter 5, provides a key aspect of work, learning, and understanding. Orr's work and the reps' response to Eureka emphasize the way in which the reps (like many similar occupational groups) find their identity: not only through longitudinal process, through identity with the corporation but to a significant degree through peer recognition.

The virtual connections among reps provided by the database suggest that virtual groups—the fabled virtual teams of the cyberworkplace—tend to mirror conventional groups, not transcend them. A study of such teams, conducted by Andrea Hornett, indicates that going virtual does not thereby allow you to go vertical. Lateral ties are as significant in cyberspace as in the old world. Cross-functionality is no easier.<sup>40</sup>

#### BEYOND EITHER/OR

The view we have offered in this chapter implicitly contrasts the formal view of structured organization—the process view—with the informal, improvisational practices that actually keep the organization going. This distinction between formal and informal is, the Stanford sociologist Mark Granovetter notes, "one of the oldest in the literature."<sup>41</sup> Its age is testament not only to our lack of originality but also to the distinction's robustness. For attempts have repeatedly been made to iron out the improvisational and informal—or perhaps to iron them *in* to routines. Frederick Taylor's "scientific management" sought to program

every move of workers into a tightly choreographed and coordinated routine. And Chester Barnard, the grandfather of organizational studies at Harvard Business School, portrayed the informal as deviant behavior, something to be stamped out.<sup>42</sup>

Standard notions of process, too, give primacy to the formal—the account that can be written on that blank sheet of paper. People are to forget all that they know, including all their hard-won, practice-based knowledge, business process reengineering implies, and learn again in accordance with organizationally ordained process. What isn't ordained from above as part of process risks being labeled “non-value adding” and therefore suspect.

Given the radical reorganization demanded by the conditions that we outlined at the beginning of this chapter, this tilt toward a top-down view is not surprising. Businesses had to kick themselves through discontinuous change under enormous pressure. Practice-driven change, by contrast, tends to be more continuous and continual. For that very reason, overlooking practice risks cutting organizations off from such continuous change. And if they are cut off like this, organizations can only expect to lurch from one top-down “palace revolution” to another.

Of course, practice-based views have their own blind spots. The current interest in virtual organizations, for example, downplays the uses of formal organization and structure, while self-organization abandons it almost entirely.

In this chapter we have weighed in favor of practice over process. As should become clear in later chapters, however, our view attempts to see the strengths that come from balancing the two, favoring neither but balancing both formal and informal, structure and spontaneity. The process view is important, giving shape and direction to an organization. It always risks, however, binding people too tightly to process, cutting them off from

their “lateral” resources, blinding the organization to improvisation and new ideas, which may enter organizations along the lines of these peer groups.

Practice suffers from the opposing danger—of allowing itself to evolve too independently and so become too loosely “coupled” to the organization. The balancing act, as we shall see, requires developing coupling loose enough to allow groups to develop their own new knowledge, but tight enough to be able to push that knowledge along the lines of process. The idea that all that matters here is information woefully underestimates the challenges involved, which are ultimately, as we shall see, challenges of organization, knowledge, and innovation.