Chapter 23

Creating the Corporate World: Strategy and Culture, Time and Space

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Let's start by saying that corporations, as they go about their business, create the world in which they – and we – live. This is by way of asserting that they don't just fill up the landscape with their activities because, after all, they have to be *somewhere*. Corporations actively create an entire geography appropriate to their needs and their understandings about how the world works. More strongly, firms need to create this geography not merely as a by-product of their productive and competitive activities, but as part of their ordinary operational and strategic work – as part of the work of surviving and making a profit in a capitalist economy.

We know, of course, that corporations do not have free rein to design any social and economic landscape of their choice. They must deal with the legacy of history and with other individuals, social groups, and institutional agents. One might paraphrase Marx to suggest that firms make their own historical geography, but not in circumstances of their own choosing. But in this chapter, I want to focus on how the world looks from the point of view of this very particular social agent – the corporation – and at what happens when it needs to change its world. I also want to focus on one set of relationships that the firm has with the "outside world" and how it relates to others of its type – the corporations against which it competes. Accordingly, the emphasis here will be on competitive strategy and not so much on production processes, and it will be on life at the top and not so much on how firms construct their relationships with, for example, workers, communities, and governments.

Corporate Culture and Strategy

Where does competitive strategy come from? Usually we think of it as a rational process of decisionmaking that weighs the information available and deduces the appropriate strategy from it (see, for example, Porter, 1980). It is acknowledged that one can't know everything, that not all information is equally good, and that some degree of uncertainty and risk is unavoidable. Similarly, it is recognized that certain kinds of change will trespass against the interests of some individuals who may try to

derail a strategy. Consequently, bad decisions are possible but they ought not to be systematic and they ought not to happen *despite* access to very good information. At bottom, it is assumed, corporations act in their own best interests.

Here I want to assert that corporations *do not* always act in their best interests. They frequently develop misguided strategies on the basis of excellent information about what they ought to do. I will describe an example of how this process worked in an individual firm. But I want also to argue that at certain historical and geographical conjunctures large numbers of firms may refuse the implications of the information they have in their hands and, consequently, fail to adapt appropriately to changes in their competitive environment. This will require linking up the explanation of individual corporate strategy formation with a larger story of how and why the environment changed. I will try to make this link through a discussion of how corporate cultures influence strategy-formation.

Corporate culture has lately become a fashionable topic.[1] It is usually viewed as the object of strategy: changing the strategy requires us to change the culture. This is hard because culture is largely a matter of traditional or habitual behaviors and attitudes and these are inherently resistant to change.

I want to approach corporate culture from a different angle – one in which culture is inherently involved in the *production* of strategy. This may allow us to understand why corporations sometimes refuse necessary changes even when they have very good information about what to do.

What, then, is corporate culture, where does it come from, and what does it do? Broadly speaking, corporate culture is an ensemble of material practices, social relations, and ways of thinking. Material practices are how work is actually done – not just the work of people on the production line, but also the work of managers, engineers, accountants and the like. Material practices also include *what* is done – what kinds of things are produced by these different people – and why. The "things" produced include actual products, but also less tangible outputs such as the development of production processes, organizational practices, accounting standards, and strategies about what the firm should do.

Social relations include the ordinary rules of behavior within a community that allow us all to work efficiently with one another. At IBM, for example, the dress code was famously dark suits and white shirts; at Apple the norm ran to T-shirts and jeans. Wearing Apple clothes to IBM or vice versa would mark you instantly as an outsider; someone with whom real communication was impossible because it was patently evident that you did not speak the local language.

More profoundly, social relations underlie how power, rights, and obligations are produced within the corporate community and how they are allocated. In short, where does power or responsibility come from, who has it, and how is it used? In some corporate settings, production workers literally have no power over their own bodies during the workday. They must be physically in their assigned spot at all times, and the individual gestures used in their tasks are choreographed in detail by someone else (Wright, forthcoming). In others, line workers are invited to help design the production process they are engaged in and have the power to stop a process that is, in their judgment, going wrong.

Finally, ways of thinking include not merely ideas and meanings, but also processes of interpretation and the construction of knowledge. How are data and

information transformed into something that we know and can act upon? How are values developed about what is important, what kinds of information count, what kinds of activities are productive, who is a member of our community, and who is not? All of these things – work, power, and a whole range of understandings about how the world works and how it *ought* to work – constitute a corporation's culture.

Where does it come from? Everyone in the firm is in some way constructing its culture. But here we will focus on the dominant culture of the firm; which is to say the culture of the dominant – the people who run the firm and develop its strategy. Corporate culture in this sense must necessarily be produced through and be expressive of the material circumstances and understandings of the powerful. It is, accordingly, in important ways, *about* power – about who will have it and what they will use it for. At the top of the corporation, the most important kind of power at stake is the power to exercise one's strategic imagination – to impose one's own view of how the world ought to work. The strategist does this in competition with others of his type both within the firm and with the people running competing firms.[2] This implies that the process of cultural production in the firm is inherently and deeply conflictual. People must, unavoidably, struggle to acquire this power, to use it effectively, and to valorize the results.

Are corporate cultures inherently resistant to change? If this were true, it might explain why corporations have a hard time reacting effectively to major shifts in the competitive environment. But corporations change all the time. They buy and sell divisions, they invest in new equipment, they enter or leave particular markets, they lay off some kinds of people and hire others, and they are constantly reorganizing themselves according to the latest management fads. The problem is not that firms don't change in the face of new challenges. The problem is that they often do not change *appropriately*. This is because the culture can accept certain kinds of change while it is unable to accept others. Cultures are not embodiments of tradition; instead, cultural processes are deeply involved in the selection of which traditions to value and which can be disposed of at need. Corporate cultures *select* some kinds of change and refuse others, although those refused might be exactly what is needed and this fact might be well known within the firm.

The Xerox Corporation and the copier wars

Here's an example.[3] The Xerox Corporation was one of the most successful companies in American history, the first to achieve $1 billion in annual sales within ten years of starting up. It was an innovative company – the first to bring an easy-to-use plain-paper copier to market. It also realized that the real money lay not in selling the extremely expensive machines, but in leasing them cheaply and charging a small sum for each copy made. The company was seemingly untouchable, owning something in excess of 90 percent of the world market for copiers.

Nevertheless, this was a company that worried about its future and actively sought to protect itself against the new and the unexpected. It anticipated, for example, the emergence of competition from IBM and Kodak which began to appear in the 1970s. Like Xerox, Kodak and IBM made large, expensive, technically elegant machines that offered very high performance but cost a fortune and often broke down. From this point of view, they fit perfectly with Xerox's understanding

of what the copier market was like and how you made money in it. Xerox did everything it could think of to counter the threat that Kodak and IBM posed. It even overturned its oldest, most sacred corporate taboo to deal with the fact that Kodak had introduced document recirculation. At Xerox, the Prime Directive was "don't damage the original," which meant handling it as little as possible. If Xerox could violate this stricture, it was apparently ready to accept any change to stay on top.

Nevertheless, within ten years, Xerox's market share had slipped to around 15 percent. This was a true catastrophe, but it wasn't because of IBM and Kodak. It was because the market was voting overwhelmingly for the small, slow, inexpensive, reliable machines offered by Japanese competitors. Xerox knew quite a lot about this competition, principally through its subsidiary, Fuji-Xerox, which the company had presciently established in the early 1960s.

Fuji-Xerox felt the force of this competition first. In response, it threw everything into a crash program to develop a machine that would be competitive in the Japanese market. It developed this machine in less than two years, compared with the five to eight year development cycle typical of Xerox. Fuji-Xerox also reorganized the way it made things to produce the new machine with good quality at a low cost. The machine they came up with in 1972, the 2200, was quite successful in the Japanese market.

Rank-Xerox, the company's European subsidiary, was the next to be hit by this new model of competition. In 1977, they responded by buying the machine developed by Fuji-Xerox and selling it in Europe. In the first year, they sold 25,000 – a success that was stunning even by Xerox standards.

Managers from Japan and Europe for years actively urged the parent company to produce the 2200 for the American market. A committee was established to study the problem. This might seem to promise the typical bureaucratic death of a good idea, but after an exhaustive review, the committee recommended unequivocally that the parent adopt the 2200. Top management vetoed the plan. Then the company commissioned McKinsey consultants to re-evaluate the situation. McKinsey enthusiastically endorsed Fuji-Xerox's strategy and its product. Again, top US management rejected the idea.

There were two fundamental reasons for this. One was that small, slow, simple, cheap, low-margin machines had no value or meaning in the dominant Xerox culture. The company had committed itself to large, fast, technically sophisticated, high-margin and expensive products. It understood itself in the world as the bearer of a certain kind of product for a certain kind of market. Accordingly, even if small machines were flooding the market, the only conceivable response was to build a better large machine.

The second reason is that although the dominant culture could recognize IBM and Kodak as potentially serious competition, it could not recognize the Japanese as accredited players in this particular game. This is despite the fact that it was precisely the Japanese who had pushed them to the wall while their own Japanese subsidiary was offering them a nearly guaranteed and essentially free solution. As someone who was on the scene at the time put it, the parent company's attitude was "we taught them everything they know about copiers. How could they have anything to teach us?" (Schoenberger, 1997, p. 200). David Kearns, who is widely credited with eventually turning Xerox around, argues that the company both knew what the

problem was and at the same time could not accept this information: "I doubt that it was a case of the information not being available. I think it was purely a matter of denial" (Kearns and Nadler, 1992, p. 122).

Notice, however, that although Xerox had invented xerography and IBM and Kodak had not, people at Xerox didn't assume that IBM and Kodak had nothing to teach them. Similarly, Xerox was never in denial about the competitive threat posed by these two. Its arrogance and its denial were both highly selective. This selectivity meant that information that was literally on the table was, within the frame of Xerox's corporate culture, uninterpretable. It was information that could not be transformed into knowledge and acted upon appropriately. Note that it was Xerox's culture that made the Japanese unreadable, not Japanese "inscrutability."

The effort to turn the company around was a long and arduous one that involved a kind of guerrilla warfare according to Kearns. As part of this struggle, a number of high-level executives left and many positions were filled by people from Rank-Xerox. They brought with them a new sense of who the company was and what it ought to be doing. The conflict, then, produced major shifts in who held power in the company and what they wanted to do with it and, in tandem, deep changes in the company's material practices (the kinds of things it made and how it made and designed them), social relations (decentralization of authority, worker participation), and ways of thinking (about the market, competition, prices, product quality, etc.). In effect, the winners were able to institute a new culture and a new strategy. Note that the strategy changes only in and through cultural change. The old culture did not produce the new strategy.

Second, the process of cultural change within the firm involves struggle and conflict. Peoples' identities and commitments – how they understand themselves in the world and what they think they ought to do in it – are at stake. So, too, are the sources of their social power within the firm and their ability to impose their own sense of who and what the firm ought to be and how it should operate. Little wonder that the struggle is so acute.

Corporate cultures and industrial crisis

Xerox is not the only company about which such a story can be told. The specifics will vary, but it seems plausible to suppose that the intricate relationship between culture and strategy is a normal feature of corporate life. Moreover, each individual corporate story is embedded in a broader industrial culture that is characteristic of a particular time and place. The individuals may be extremely distinctive even within a given industry – Ford is a very different place from GM, for example – but there are shared understandings and practices that have linked a broad swathe of corporations in North America and Western Europe in the twentieth century.

The question is whether there are historical–geographical conjunctures that pose such a deep challenge to the prevailing culture that an entire industrial system may be thrown into crisis. For the answer to be yes, we would need evidence of a competitive challenge that went far beyond the modifications of product type or adjustments in price levels that are normal features of competition in corporate life. It would have to be a challenge that embraced a broad set of practices and understandings related to how markets work, how companies make money in them, who

production workers are and what they are for, how things ought to be designed and made, and how different kinds of activity and people within the corporation are to be valued.

I want also to suggest that such a deep competitive challenge necessarily involves a major shift in practices and understandings related to time and space. These may be exceptionally difficult to analyze and respond to effectively because we are unused to thinking about how social practices *create* particular temporal rhythms and spatial formations. But I shall try to show in what follows how the temporal and spatial underpinnings of a particular social order can be rendered quite suddenly obsolete when faced with competition from a new cultural ensemble with a different set of spatio-temporal practices and understandings. Indeed, because time and space appear to be so natural and beyond manipulation – unlike, say, products or production processes – identifying changes in how they operate socially may be the best indicator of the depth of a competitive challenge. In other words, if you can see that time and space are transformed by a new industrial model, you know that it represents a very significant change.

Competition in Time and Space

It might seem obvious that factories came into existence because they were more efficient than other ways of organizing production such as the putting-out system. Why else would anyone invest in a factory, after all? But there is considerable evidence that the transition from putting-out to factory production was not driven primarily by efficiency considerations. The problem with putting-out was not that it was inefficient but that the capitalist had no control over how long people worked. People worked at spinning or weaving for as long as *they* needed to, and then they stopped and did something else. Factories ensured that work went on long enough to provide the surplus that became the capitalist's profit. In other words, the factory made possible a new kind of *time discipline* which was necessary to the whole project of capitalist development and for the profitability of any individual firm.[4]

This new time discipline entailed a new kind of spatial discipline. Work and workers were concentrated in specialized spaces that were separated from the home and increasingly clustered in towns and cities. Workers were assigned specific places in the factory, and their movement around the factory was strictly supervised and constrained.

In short, capitalists must act *on* as well as in time and space as part of their normal business. It is in this sense that we can think of time and space as being socially constructed (rather than natural) and as being subject to the pressures of corporate life.

Over the long run, the tendency in modern capitalist society seems to be that everything speeds up and gets closer together as transportation and communications technologies are improved and cheapened. In the end, as we are constantly informed, we are increasingly harried members of the "global village." Everything has sped up to such a degree that space and distance apparently no longer matter (Harvey, 1989).

In the short run, though, the picture is more complicated. Speeding something up in one arena may actually cause some other process to slow down, or may make

transportation a bigger problem than it was before. Someone has to decide whether such a trade-off is worthwhile and contributes to the profitability of the firm. This means that time and space are strategic problems for the firm.

You need look no further than your personal computer to see these trade-offs in action. You probably know that your PC's memory is vastly larger than it would have been ten years ago. This didn't happen because manufacturers crammed more chips into the box, but because they crammed more circuits onto the same chip. To do this, they had to make the circuit line-widths smaller – now substantially below 1 micron. This required billions of dollars in research and development, and billions more in investment in machines and factories capable of operating at this scale. The result is a new bottleneck in transferring all this data into and out of the chip or into and out of the machine. So everyone then must work on increasing bandwidths to accommodate vast quantities of data flowing faster and faster. Also, it turns out that you can make the hardware run faster if you transfer some of the functions into software. But this creates a huge bottleneck in software production: time is compressed in one arena (the functioning of the hardware) but everything slows down in another (writing software).

So there you are, plugged into the Internet – the very essence of a communications technology that is so fast that space and place seem to disappear altogether. You are operating in pure ether, summoning up information and commodities from out of the void.

And yet, if you could look behind the screen, here are things that you would see: warehouses full of stuff with real people driving forklifts around and working the packaging lines, while behind the warehouses are actual factories where people make all that stuff. These are rooted on the ground, and their physical presence and fixity make possible the illusion of utter spacelessness. The corporations necessarily create a real world in tandem with the virtual world.

Even your activities on the Web are mediated through "server farms" where many large computers are crammed into a building processing signals. Server farms are the places that allow us to transcend space, and they are the centralized entities that allow decentralized data processing and information exchange to flourish (Lohr and Markoff, 1999).

But here's the tension. You need to construct physical assets on the ground in order to compete in the ether, which means making large bets about what kind of assets to develop.[5] If you bet wrong, these assets stand to be suddenly vaporized or, to use a more technical term, devalued. From this point of view, e-commerce is not a new business paradigm – it is the normal one speeded up, which means that the risks pile up faster and ramify through the system in complicated ways.[6]

What I've tried to demonstrate is that alterations in time and space are a normal feature of capitalist competition. They may take place so gradually that we're not even aware of them. What happens, though, when a major shift in the spatio-temporal regime takes place in industry?

Time–space Transformations and Industrial Cultures

Something of the sort has arguably happened in the shift out of standardized mass production and into a more flexible production regime. This regime hinges on

drastically compressing time in the development of new products and in the firm's ability to change what it is producing on the line. The transition began in the early 1970s and was accompanied by a tremendous crisis in large-scale manufacturing industry in the USA and Western Europe, marked by widespread unemployment and working-class income stagnation, followed more gradually and grudgingly by cutbacks in excess capacity.

The recovery has been highly uneven, with some sectors and firms and regions doing better than others. Though unemployment has declined, notably in the USA, workers ejected from stable, high-wage jobs in manufacturing have not recovered their former levels of job security and rates of income growth. Income distributions have become increasingly polarized, reversing a nearly two-decades-long trajectory of increasing income equality in the leading industrial economies (Mishel and Bernstein, 1998).

What was the nature of this crisis, and why has it been so hard for many firms to recover from it? The crisis was driven in part by the emergence of a new regime of competition and production organized around a very different conception of how markets work and how time and space should be managed.

The "before" picture is a highly stylized outline of the standardized mass production system that originated in the USA and was adopted with modifications in much of Western Europe.[7] Markets were understood to be relatively homogeneous and stable over time. They might be stratified – from Chevy at the low end to Cadillac at the high end – but within these strata and allowing for different colors and other superficial details, everyone bought essentially the same product. Moreover, the product stayed essentially the same for years on end. Fins might come and go annually, but the chassis design was good for ten years and the engine design for fifteen.

Markets were also understood to be stably divided among a small number of known competitors who avoided both cut-throat price competition and constant product innovation. They competed instead on the basis of advertising, brand name loyalty, financing, and distribution networks.

One reason for moderating the pace of product change is that new product development took a very long time and cost a tremendous amount of money. This had to be amortized over a high volume of output – literally millions of units. You needed to sell the thing for years in order to recover all of your costs without pricing the product so high that no one would buy it.[8]

Another reason for moderating the pace of change and for making only a limited variety of products has to do with how mass producers made things. They preferred not to rely on the skills and initiative of workers. Skilled workers could make a variety of things, but they cost more than unskilled ones, and they worked at their own pace and to their own standards of quality and completeness. In the mass production environment, skills were, to the degree possible, transferred to the machines and the pace of work was set by the speed of the moving assembly line. Machines were designed to do one thing extremely well. Dedicated machinery of this sort is quite expensive. You need to make a lot of that one thing in order to recover costs. If you make a huge amount, dedicated machines are extraordinarily efficient. Each thing that comes out is produced quite cheaply. This is the great benefit afforded by scale economies, but it comes at a price. You have to produce at or near capacity in order to keep your costs down, no matter what the market is doing.

In sum, the way to make money in a mass production environment is to make as much as possible of the same thing every year for as many years as possible while convincing your customers that the thing they are buying is entirely new and different from everyone else's. This is a feat that you can only pull off in a reasonably stable competitive environment where everyone plays by the same rules.[9]

Mass production was associated with a characteristic time–space regime. Time was sharply compressed in production. At the inception of the moving assembly line at Ford in 1913, for example, the time it took to assemble a car chassis fell from 12.5 hours to 93 minutes, essentially overnight (Hounshell, 1984, pp. 248–55). On the other hand, as we have seen, time remained stretched out in the realms of product development and in the turnover of fixed capital (all those dedicated machines that made so much so fast). Instead of days and hours, these changed over a period of years – the longer the better.

The temporal stability of the product and its homogeneity within the various price strata in combination underwrote an extraordinary spatial flexibility in the system. In making an endless number of the same thing all the time, it doesn't really matter where you make it. What counts is that product flows continually through the pipeline. In this kind of system, you can make component parts in twelve different countries and assemble them in a thirteenth.

Distance in this system appears to be a solved problem. So long as the cost of moving things around is not prohibitive nothing has to be really near anything else. Instead you can locate different pieces of the production process in wildly divergent locations in order, for example, to gain access to particular kinds of factor inputs (raw materials, labor) at a particular cost. Moreover, since the system is now so incredibly productive, there's a tremendous incentive to spread production over the globe to ensure access to markets that might resist being overwhelmed by a tide of American or European imports and to guard against the emergence of strong local competition.

The system, despite its geographical expansiveness and complexity, is quite robust. Even if a factory is shut down by a strike, there are enough components and finished products piled in warehouses to operate until the strike is over.

Slowing down time in one dimension (product life cycles) allowed the speeding up of time in another dimension (production), and the stretching out of space in yet a third. Mass production implied a very particular spatio-temporal regime. It also entailed a historically specific understanding of what markets were like, how they changed, and how firms competed within them. This went along with pervasive understandings about the fundamental rules of production that guided decisions among competing priorities. In this world, for example, quantity counted more than quality and the ruling maxim was "getting metal out the door." These understandings also guided how different persons and activities were valued. Labor, for example, was looked upon as a disruptive and costly "factor of production" which should be rigorously supervised and disciplined where it couldn't be eliminated. The tremendous supervisory apparatus that this entailed was one of the great cost burdens of the system.

Taken together, this ensemble of practices, social relations, and ways of thinking is an industrial culture. Part of the work that culture does is to help establish the boundaries of the normal and the thinkable. The culture of mass production was apt

to find certain kinds of change comprehensible and desirable: speeding up the assembly line, for example, or finding new ways of eliminating labor. But it was likely to find other kinds of change – figuring out ways of rapidly altering the product mix on the assembly line, drastically compressing product life cycles, or asking workers how best to make something – impossible and even meaningless. They couldn't be contemplated, in much the same way that Xerox was unable to contemplate selling the 2200.

Unluckily, the alternative model of production and competition that emerged in the 1970s featured exactly the characteristics that the culture of mass production found abhorrent or unthinkable. This new model, I would stress, emerged out of real, material circumstances that differed sharply from those that supported the rise of mass production. Different versions of it developed in different places, but here I want to concentrate on how it looked in Japan.

It has been easy to suppose that industries developed differently in Japan because Japanese culture is so different from American culture – more harmonious, more group-oriented, more attentive to beauty, and so on. But appealing to the "Japaneseness" of the Japanese while ignoring, for example, the nature of the Japanese market and how production could be organized within it obscures more than it clarifies. We need to understand the material and historical roots of Japanese industrial culture in order to get at why it looked so different.

For example, the total Japanese market for cars in 1950 was equal to a day and a half's production in the USA. Toyota, under these circumstances, simply had to invent a different way of making cars (Cusumano, 1985; Fruin, 1992). Or consider, with space at a tremendous premium, that Japanese offices couldn't easily accommodate copying machines that were so large they required their own room. Japanese copier makers, accordingly, were under considerable pressure to figure out how to make small copiers that were also inexpensive, and reliable (Schoenberger, 1997).

The Japanese model of "flexible mass production" relies on producing at high volumes in order to reduce costs, but also manages to accomplish two other ends that the American-style system could not: producing a constantly changing mix of products on the same production line, and accommodating the continual, rapid introduction of new or significantly redesigned products. Partly the Japanese model does this by an even more rigorous application of the principles of reducing labor time in production than American firms managed to achieve. At a time, for example, when American producers required upwards of twelve hours to change dies in the huge machines that stamp out large metal parts such as car doors, Toyota could change dies in two to three hours. By 1971, die changing at Toyota took only minutes (Monden, 1981). If it takes twelve hours to change a die, you avoid changing dies like the plague. If it takes three minutes, die changes are a normal part of the job.

How do you coordinate these different product types on a moving assembly line? If you're continually changing what you're making, you need to be able to grab not just any identical part from a huge bin of parts, but *the* part that specifically goes with the particular product that you're making. Here Toyota devised an elegant solution that upended the time-management principles of the US manufacturing system. Toyota's system, known as just-in-time (JIT), also drastically altered the spatial parameters of the production system.

The American system, recall, was based on making as much of the same thing as possible. The production ethos was wholly committed to producing more and more stuff, without reference to the vagaries of the market. In a sense, production was triggered by the imperative to produce. This was possible because you could assume what the market would demand – it didn't have that many choices. Parts and components emerged at a tremendous rate, headed for the assembly line, where they would pile up until they were used. Defective parts would be swept along with the good, and the fact that there might be a problem affecting thousands of units of output would not come to light until they were already assembled into a car or a toaster. The good news, though, was that you never ran out.

The just-in-time system, by contrast, coordinates output closely with the actual profile of market demand. Production is triggered by orders coming in. The underlying ethos here to is make only what you need right now: a need on the assembly line calls for the production of the relevant part. If the immediate task is to put doors on ten light trucks, five with electric windows and five without, you send a message asking for these exact door panels and subassemblies.[10] This message causes them to be built, triggering another set of messages upstream to the people in the stamping plant, the people assembling wiring harnesses, making windows, and so forth. If the next task is doors for sedans, followed by doors for the sports model, you request these accordingly and a whole new round of activity is sparked.

The right doors must arrive just as you need them. They never would, of course, if the people upstream were also thousands of miles away. JIT does not accommodate great distances well. Or, to put this another way, the American system solved the problem of distance in production, and JIT unsolved it.

Suppliers not only need to be reasonably close, they also need to be able to align their own production rhythms with that of the final assembler. They, too, need to be able to change what they do at a moment's notice. In this way, the spatio-temporal characteristics of the model radiate outwards, encompassing everyone – workers and suppliers – who serve it. Notice that what begins as a possibility – if you *can* change dies fast enough, you can change what you make on the line – soon becomes a requirement. To be part of this system, you *must* figure out how to change dies in minutes.

This alters many things. For example, it injects a significant fragility into the system. A strike at a parts plant almost instantly shuts down a whole family of related plants. Someone missing their schedule or producing just a handful of bad parts can stop everyone else in their tracks while the problem is sorted out. Workers and suppliers are now called upon not merely to do their job, but to guarantee that it will be done to specifications and to schedule.

This means that workers have to be self-monitoring and self-motivating. Things happen too fast for the supervisory apparatus of American mass producers to be effective. If a machine went down in the American system, it was possible to wait for someone to be sent to fix it. In JIT, workers must solve their own problems. In a well-functioning JIT plant, an individual worker whose machine is malfunctioning can stop the production line until he or she has fixed the problem. In the US mass production culture, a worker stopping the line was an absolute taboo in the true anthropological sense (Hamper, 1981). Life in this new world is not relaxing. But it is lived quite differently from the old-style mass production line.

Now the underpinnings of an alternative industrial culture can be glimpsed. It is both produced by and expressive of different material practices, social relations, and ways of thinking. Its origins lie in different historical and geographical conditions, and it generates different ways of valuing people and activities. For example, workers in this system are not thought of as unruly, expensive problems that need to be supervised constantly and eliminated where possible, but as self-disciplined, value-adding members of the corporate community who can be relied upon to work *themselves* to the bone.

This point is not reached because, say, Japanese culture is more harmonious and group oriented. Japanese industrial culture hasn't always been harmonious. In the immediate postwar period, it was characterized by violent strikes and tremendous upheaval (Cusumano, 1985). A culture of cooperation on the shop floor is built through a long and difficult historical process, full of struggle and conflict, that works itself out in a very particular fashion.

Faced with this new model of production and competition organized around transformed spatio-temporal practices, many North American and European firms were very slow to respond effectively. They *did* a lot of things. They laid off workers, they closed factories, they re-jigged the division of labor. Mostly, they tried everything in their power to reduce costs. But lower cost was not the most important feature of this new model and does not explain why it was so successful. Greater variety of product, much higher quality, and a more rapid turnover of product generations were the key. Here the older industrial culture had no response.

Arguably, the old culture couldn't comprehend what was really important in the new one. In any case, an alarming proportion of the largest corporations – those that had for generations been dominant in their markets – failed to respond adequately to the new challenge. This failure persisted for years – even decades – as profits evaporated and market shares plummeted. There was no lack of evidence that something needed to be done that was not being done. There was even considerable evidence about what *was* needed. But in case after case, this information was refused although the very existence of the corporation was at stake.

Conclusion

What is striking is that at a particular moment in history so many corporations in North America and Western Europe that had dominated their markets for generations were brought low, with terrible consequences for cities and regions and communities. Decades have passed, and while some companies have recovered, others are still struggling and many have disappeared. To explain the geographical and historical specificity of this crisis, we need to account for two rather different phenomena.

The first has to do with the nature of the challenge. The new model of competition and production must be substantially different from the old – different enough that the old model cannot merely be adjusted but has to be thoroughly overhauled. How does one know when the difference is this big? One way is to count the bodies. The magnitude of the social and economic dislocation involved provides a strong indicator that the difference is big, but it doesn't tell you much about where the difference comes from or why it makes such a difference.

Another way is to analyze the material and social practices and relationships involved in the different models, and how people understand what they are doing within them and why – in short, by analyzing the corporate and industrial culture. This culture necessarily involves the production of a characteristic spatio-temporal regime. As I have suggested, a major historical disjunction in spatio-temporal practices and understandings is itself evidence of the magnitude of a cultural shift and the difficulty of adapting to new kinds of competitive challenge.

In the first instance, the spatio-temporal regime is produced through, and sustains, tremendous investments in the built and social environments. These assets constitute classic sunk costs – they are useful within the industrial regime that produced them but have no value outside of that social order (Clark, 1994). The commitment to change, then, entails enormous cost for the firm and the devaluation of what had formerly been extremely valuable. It would be surprising if this could be accomplished without trauma and great reluctance.

Nevertheless, it is presumably better to incur these costs than to die, and that is what makes the long delay in responding to the new model of competition so intriguing. Many firms very nearly did go to the wall rather than adapt appropriately, even though the nature of the adaptation required was known. The reasons for this refusal to act effectively is the second part of the picture that needs to be filled in.

It is not enough to cite the burden of tradition and habit. As we have seen, firms are not normally prisoners of tradition – they are, rather, normally caught up in tremendous changes all the time. We need to understand why *certain* traditions are selected and sustained against overwhelming evidence of their inadequacy in particular circumstances. I've tried to account for this through the notion of a corporate culture that is actively involved in the production of corporate strategy. This may allow us to understand how certain commitments become so powerful that they can't be challenged, even when they threaten the very existence of the firm and its decisionmakers.

The task here is a complex one. We need to understand how changes in the firm's environment can arise that pose a true life or death challenge for the firm, even though the firm is partly responsible for creating that environment as it competes with other companies and goes about its ordinary business. We need also to understand how, as the firm creates its world through the normal processes of capitalist life, it also creates itself as a configuration of physical and social assets that has real power in some circumstances yet is powerless in others.

This chapter falls short of achieving this task. But it might provide some ways of thinking about how these processes work out and how people – real decisionmakers – understand their situations and act within them. Accordingly, it might also give us some insight into the world we live in and the way we understand who we are and what we are able to do in it.

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Endnotes

1. See, for example, Hampden-Turner, 1990; Kotter and Hesket, 1992; Trice and Beyer, 1993.
2. One ought to be able to say "his or her type" but, as a practical matter, men overwhelmingly hold these positions. Gender-neutral language not only won't change that but gives the misleading impression that the situation might in fact be otherwise.
3. See Schoenberger (1997) for a more detailed account and citations.
4. Good historical sources include Landes, 1970; Lazonick, 1990; Marglin, 1974; and Thompson, 1967.
5. You might think that the bet would be much smaller because you don't have to build retail stores and you don't have to hire salespeople. This turns out not to be so true, and it's one of the reasons why pure Internet companies, despite their incredible stock market valuations, mostly haven't been profitable so far. For one thing, you replace a large number of cheap salespeople with a small number of very expensive programmers. You can never outgrow this need because the web sites need to be upgraded all the time and completely overhauled on a compressed time schedule. For another, it turns out that having real bricks and mortar stores may be a way of making your web site more effective. Even Gateway Computer, a paragon of direct sales, has now started opening demonstration sites in real places (Kaufman, 1999).
6. We can grant that the Internet company doesn't need to own the warehouses and factories. It may need to enter into long-term contractual relationships with providers of space and product in order to function effectively. But somewhere along the food chain, someone has to invest in these physical assets which means putting capital at risk in a situation of complex interdependencies. The Internet firms depend for their success on the suppliers, and the suppliers similarly depend on the Internet firms.
7. Not everyone operated in exactly this way, but nearly everyone was in some way involved in or touched by the system – as small-scale suppliers, for example, or small firms that survived in niche markets ignored by or unsuited to the mass producers. Good sources on how this system worked in general include Dicken, 1998; Hounshell, 1984; Piore and Sabel, 1984; Womack et al., 1990.
8. An indicator of just how long and how expensive the process could be is provided by the development experience for the Ford Mondeo/Contour. It took six years and cost six billion dollars – and this is *after* Ford worked strenuously to reduce the time and money involved in development. If Ford sells only a million of them, each car starts out with $6000 worth of development costs before it is even built.
9. Although basic industries such as steel, chemicals, and energy are characterized by different production techniques than the one sketched here, they also depended on scale economies and high rates of capacity utilization to keep their costs down, and a stable competitive environment to keep their profits up. And since they are closely tied into the final assemblers as suppliers of material inputs in production or use, the rhythms of product change characteristic of those sectors closest to final consumption markets tended to filter back upstream.
10. At Toyota, the messages were sent on small cards known as *kanban*: the system as a whole is often known as the kanban system.

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