

CHAPTER 7

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THE DIFFUSION  
AND DOMESTICATION  
OF MANAGERIAL  
INNOVATIONS

THE SPREAD OF SCIENTIFIC  
MANAGEMENT, QUALITY  
CIRCLES, AND TQM BETWEEN  
THE UNITED STATES  
AND JAPAN

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7.1 INTRODUCTION

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COMPARATIVE organizational research provides an opportunity to build socially grounded theories of organization. While the business literature often adopts a

narrow efficiency logic, examination of the way organizations vary across countries suggests the importance of cognitive models, national historical trajectories, the relationship between firms and the state, and variation in legal, labor markets, and employment regimes.

Much comparative work lies within the rubric of a convergence/divergence debate. A 'logic of industrialism' (Kerr *et al.* 1960) contends that organizations become more similar over time as the requirements of industrial society eliminate primordial social and cultural differences. Many Marxist accounts also anticipate convergence, arguing that market flexibility, decentralization, and deregulation lead to more homogeneous national economies after the collapse of Fordism (Hyman and Streeck 1988).<sup>1</sup> Meyer *et al.* (1997) contend that models of bureaucratic structure and employment relations are increasingly global in scale.

'Divergence' theories counter that national differences are large and persistent over time. Maurice, Sorge, and Warner (1980) document substantial cross-national differences in organizational structure linked to variation in schooling systems and labor markets. Hofstede (1980) and Triandis (1995) locate nationally-specific cultural orientations towards fundamental issues like inequality, individualism versus collectivism, and competition versus cooperation. Dobbin (1994) and Hamilton and Biggart (1988) argue that cross-national variation reflects the state's organization and bases of legitimacy, while Gooderham, Nordhaug, and Ringdal (1999) point to the effect of legal institutions on human resource practices. Guillen (2001) argues that path dependency in economic development leads to the widening of organizational differentials over time.

Perhaps the most common comparison is between Japan and the West. Early organizational research anticipated convergence on the Western model, with Harbison confidently concluding that otherwise 'Japan is destined to fall behind in the ranks of modern industrialized nations' (1959: 254). But Japan's remarkable success in the postwar period made the opposite conclusion credible. Most notably, Dore (1973) and Lincoln and Kalleberg (1992) argue that the combination of lifetime employment, seniority-based wages, and company unions provides a powerful recipe for effective cooperation within the firm. Dore contends that Japan's twentieth-century industrialization allowed it to avoid the class conflict that marked the British workplace.

The success of Japan and other 'late developers', in company with an expanding knowledge base in comparative organizational studies, has led to a variety of ideas about how to transcend or enrich the convergence/divergence debate. In this volume, for example, Harry Katz argues that a pattern of 'converging divergence' is emerging where national business communities show standardized forms of

<sup>1</sup> Other recent Marxist work emphasizes how organizational constraints and the regulatory role of the state create diversity across varieties of capitalism (see e.g. Coates 2000).

diversity, while Chris Smith's model of system, societal, and dominance effects describes forces promoting both convergence and divergence.

Whether viewed in simple or complex ways, the convergence/divergence debate tends to focus on cross-sectional variation rather than on the movement of organizational practices from one place to another. But arguments like the 'advantages of backwardness' imply an important role for contact and communication across national boundaries—it is knowledge of the problems others faced and how they sought to resolve them that distinguishes early and late developers. We think it is useful to start from an assumption that international linkages are pervasive.

Multinationals embody the most explicit sort of organizational tie, where business units in different countries are managed under a single authority and ownership structure. Kostova and Roth (2002) examine how management practices are transferred from headquarters to national subsidiaries, with varying reception depending on their fit to national institutional environments. Influence may also flow in the opposite direction; for example, Cole (1999) found that Hewlett-Packard's quality program was based on the experience of its Japanese subsidiary. Other forms of direct organizational contacts include partnerships, strategic alliances, and joint ventures like New United Motor Manufacturing Inc. (NUMMI) (Adler 1993).

Firms are also linked by transnational communities of experts. The papers collected in Alvarez (1998), for example, provide a rich account of the burgeoning management knowledge industry. Industry boards and associations, professional associations, business journals, consultants, and schools of management are all growing apace, and show much homogeneity across national borders. These experts act as key carriers of management ideas by advocating, explaining, and often implementing organizational innovations.

Given this thick web of interconnections, it seems more useful to think of organizational practices and structures as diffusing from one place to another than as being independently constructed in each location. This perspective suggests new questions. 'What linkages facilitate the movement of a practice across national borders?' 'What sorts of practices are quick to move, and which are not?' 'What determines the direction of diffusion?' 'How are practices translated as they diffuse?'

Rather than try to comprehend a 'global diffusion system', we limit our attention to the flow of management practices between two countries—the United States and Japan. Much research has sought to explicitly link or implicitly contrast these two organizational communities, for a number of good reasons: the size of each national economy and critical role of both American and Japanese corporations in global markets, the cultural and institutional distance between the two, and the degree to which the two countries have provided each other with organizational

models. The relationship between the United States and Japan should not be assumed typical, but it is certainly important.

We examine three 'moments' in the diffusion of managerial ideas between the United States and Japan. These are the flow of scientific management (from the United States to Japan), quality control circles (from Japan to the United States), and company-wide quality control (from Japan to the United States).

## 7.2 FROM AMERICAN SCIENTIFIC MANAGEMENT TO JAPANESE PERSONNEL MANAGEMENT

'Scientific management' is perhaps the most distinctive American contribution to the theory and practice of the corporate organization (treatments from different perspectives include Braverman 1974; Jacoby 1979; Litterer 1961; Shenhav 1999). The approach is most strongly associated with the work of Frederick W. Taylor. But Taylor's proposed science was just part of a broad family of efforts to apply the new professional disciplines of industrial engineering, mechanical engineering, and cost accounting to managerial work.

As a concrete technology, Taylorism emphasizes systematic analysis of productive tasks with an eye to locating 'the one best way', testing employees to optimally match them to work roles, and the use of piece rates to motivate workers to maximize production. Proponents of scientific management like Taylor and the Gilbreths developed time study and motion study to achieve these aims, while engineers like Henry Gantt formalized production charts.

Scientific management embodies a social mobility project for industrial engineers (Stark 1980). By separating planning and execution, scientific management enlarged the role of professionals (and possibly managers, though see Shenhav 1999) and diminished that of foremen and workers. In case anyone missed the implications, Taylor made them explicit:

This work is so crude and elementary in its nature that the writer firmly believes that it would be possible to train an intelligent gorilla so as to become a more efficient pig-iron handler than any man can be. Yet it will be shown that the science of handling pig iron is so great and amounts to so much that it is impossible for the man who is best suited to the type of work to understand the principles of the science, or even to work in accordance with these principles without the aid of a man better educated than he is. (Taylor, 1911 [1911]: 40-1).

But scientific management was not presented as a system for deskilling workers and improving the bargaining position of owners. Taylor posed his approach as a response to increasing levels of labor-management conflict in American business, and in fact attention to scientific management rose and fell with the strike rate in the decades following the turn of the century (Shenhav 1995). Outflanking earlier appeals to a preindustrial commonality of interests and to employer benevolence, Taylor argued that opposition between workers and employers would diminish as the size of the pie grew.

Data on the spread of organizational practices associated with scientific management in the United States is scanty. One percent of American firms had adopted Taylorist methods in 1909 (Kogut and Parkinson 1993: 182). By the mid-1930s, between a quarter and a third of companies surveyed by the National Industrial Conference Board utilized time study with increased implementation over the decade (Guillen 1994). Piecework was more common, with about half of all firms making use of the practice. Manufacturers and large firms were the most prominent users of scientific management.

As a managerial ideology, scientific management experienced a checkered career in the United States. In part, this reflected competition among the many versions of the approach. Taylor, Frank and Lillian Gilbreth, Harrington Emerson, Henry Gantt, and Charles Bedaux all touted the distinctiveness of their methodologies. And as scientific management became fashionable, a horde of 'upstart' efficiency experts appeared on the scene. Frederick Colvin, editor of the *American Machinist*, complained:

Science was in a fair way to becoming another religion or cult, if one could judge by the columns and columns of space in the increasing number of Sunday supplements. . . . [This trend] brought in its train a fair number of charlatans or thimblerriggers who figuratively set up their medicine shows in the public square and sold flummery and hocus-pocus in the name of science (Colvin 1947: 154)

Scientific management was also opposed by organized labor, which rejected piece-rate compensation and the rule of the time study man. Taylor's most publicized 'intervention', the implementation of scientific management at the Watertown Arsenal, led to a strike and federal investigation. Workers saw Taylorism as infringing on traditional methods and usurping control over their own labor (Braverman 1974; Jacoby 1979). Even managers resented the overweening claims of the industrial engineers (Shenhav 1999).

While Taylor's dream of industrial peace was scarcely credible, scientific management became emblematic of a distinctively modern approach to the organization of work. From an operational point of view, it offered a new set of concrete technologies (such as time study) around which Fordist mass production could build. From a cultural perspective, scientific management promoted a rationalist

vision of the organization that identified managers and engineers as the key actors and control over work processes as a fundamental goal.

As the United States overtook Great Britain as the world's leading industrial and technological power, scientific management came to represent 'the' American organizational model to the rest of the world. Enthusiasts included French organizational experts and the Communist Party of the Soviet Union, which saw Taylorism as a model for technological rationalization and growth. In countries like Great Britain, by contrast, scientific management made little headway because of resistance from organized labor (Kogut and Parkinson 1993) and the lack of a strong and independent engineering profession (Guillen 1994).

Late nineteenth-century Japan is often depicted as a 'rational shopper' (and possibly a compulsive one as well). After the Meiji Restoration in 1868, Japanese governmental and industrial elites vigorously searched the West for new organizational models. As Westney (1987) details, Japan selected purposively among the institutional designs offered by different countries, modeling its new navy after Britain, its army after Prussia, and its judicial and police system after France. In the field of industrial management, Japanese attention focused on the American system of mass production and rationalized management (Greenwood and Ross 1982).

Scientific management was rapidly disseminated in Japan (Littler 1982; Warner 1994). Frederick Taylor's *The Principles of Scientific Management* was translated into Japanese in 1912, just a year after it was published in the United States, and sold more than a million copies in a version revised for workers. Enthusiastic exponents of Taylor's approach included Yoichi Ueno and Araki Toichiro (Gordon 1989; Greenwood and Ross 1982). In 1921, the Industrial Efficiency Research Institute (Sangyo noritsu kenkyujo) was formed under Ueno's leadership to promote the methodology of scientific management.

Scientific management moved to Japan as a set of concrete practices as well. Some Japanese corporations adopted motion-saving techniques as early as 1913 (Cole 1989). Firms like Mitsubishi Electric and Nippon Electric took the lead, as did manufacturers like Kannebo and Toyobo in textiles.

These developments took place in the industrial context far removed from the openly conflictual American industrial scene of the first decades of the twentieth century. In Japan, business associations like Ryumonsha and Kogyo Kyokai pictured the factory as a moral community where employer benevolence and employee loyalty replicated the feudal patron-client bond (Kinzley 1991). Japanese policy makers and elites sought to prevent the emergence of American-style class conflict by appealing to traditional communal values. In key debates over Factory Law legislation in the late nineteenth century, both proponents and opponents conceived of workplace relationships within a framework of natural friendship and intimacy (Kinzley 1991: 17).

Within this context, Japanese interpretations of scientific management were linked to ideas about personnel management in Japan that directly opposed the core meanings of Taylorism in its birthplace (Gordon 1989; Hazama 1977). In the United States, scientific management stood for sweeping away 'industrial betterment' schemes that posed a false moral community in favor of clarifying the functional interdependence of manager and employee, and for replacing the traditional authority of the foreman and craftsman with the science wielded by the engineer and manager. In Japan, scientific management was seen as building rather than simplifying employee skills, and strengthening rather than deflating preindustrial understandings of community. The notion of systematically improving production techniques was accepted, while individualizing incentives like piece rates were rejected.

Japan's Industrial Efficiency Research Institute noted above was thus established within *Kyochokai*, the 'Harmony and Cooperation Society'. Formed in 1919 by the state and leading corporations, *Kyochokai* conducted education and research aimed at the alleviation of labor conflict. The Industrial Efficiency Research Institute's emphasis was on increasing worker commitment and improving industrial training rather than on radical deskilling. Its first director, Yoichi Ueno, was a psychologist whose disciplinary background was in sharp contrast to the engineering and technical experience of American proponents of scientific management (Kinzley 1991; Shenhav 1999).

The assimilation of Taylorism into what would be seen in the United States as an alternative 'human relations' frame appears in industry experience as well. For example, the Japanese National Railway was an early formal adopter of scientific management principles in the mid-1920s. But it delayed implementation of motion study until 1929 in favor of group discussion and problem-solving teams (Levine and Kawada 1980: 201). Japan's version of scientific management led toward a personnel management system that combines rationalized production with participatory activities and themes of industrial harmony, a combination that reappeared after World War II in the Japanese quality movement.

### 7.3 FROM JAPANESE QUALITY CONTROL CIRCLES TO AMERICAN QUALITY CIRCLES

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Quality control circles developed in Japan to involve foremen and workers in quality control. They consist of a small group drawn from a workshop or unit that studies and applies quality control methods, particularly careful observation

and statistical analysis, to production problems. They are *jishusei*, a term often translated as voluntary, but closer in meaning to autonomous. Japanese managers might set up quality control circles throughout the firm, but would not direct them or make them responsible for carrying out official duties.

Quality control circles stemmed not from a single author or network of competing consultants (as Taylorism had), but from a collective one: the Japanese Union of Scientists and Engineers (JUSE). Established in 1946 during the period of American occupation, JUSE began by promoting American statistical quality control techniques like Shewhart's control chart and sampling inspection methods. In 1950 JUSE invited W. Edwards Deming, a student of Shewhart and director of SQC (statistical quality control) training in the US War Production Board, to give eight days of workshops. When Deming declined the honorarium for the talks, JUSE used the funds to establish the Deming Prize for Quality Control.

In spite of Deming's personal popularity and JUSE's efforts, statistical quality control methods per se were little followed in Japan, perhaps because they failed to meet the needs of Japan's war-ravaged firms. For Tsutsui, these sophisticated statistical techniques were no less than 'fitting jet engines on wooden biplanes' (1996: 315). Japanese quality control moved towards broader organizational strategies for improving product quality, methods which drew on the tradition of forming problem-solving groups in the workplace (Ishikawa 1984).

As the poster child of a major professional association, quality control circles can be quite precisely dated. The idea was promulgated in 1962, when the Japanese Union of Scientists and Engineers first published *Genba-to-QC* (Quality Control for the Foreman) and launched a drive to encourage the formation of quality control circles in Japanese industry. The first QCC was registered in May 1962 (the Matsuyama Carrier Equipment Circle of Japan Telephone and Telegraph).

QC circles spread widely and rapidly throughout Japanese industry. By 1970, 30,000 circles were registered with JUSE, and a decade later the count had risen to more than 100,000 (Lillrank and Kano 1989). While never the 'management secret' they were touted to be in the American business press, quality control circles played a substantial and well institutionalized role as the participatory wing of Japanese quality control.

Information about quality circles was disseminated from Japan to the United States and around the world in several ways. Quality control experts like Joseph Juran returned from trips to Japan with news of how shop-floor workers were solving manufacturing problems (Juran 1951).<sup>2</sup> Japanese quality circles toured

<sup>2</sup> The American literature often credited Juran and fellow quality expert W. Edwards Deming with introducing the quality control circle to Japan. This view exaggerates a grain of truth. Deming's lectures on quality control had been greeted with enthusiasm in Japan, and their ideas (on statistical quality control and company-wide quality efforts) are compatible with the QC circle. Neither man envisaged or promoted the concrete organizational practice of the QC circle.



American and European businesses describing their approach, and delegations from abroad made the return trip.

The first major quality circle program within the United States was started in 1974 at Lockheed's Aeronautics division in Santa Clara, California. Lockheed's circle program was stimulated by the visit of a touring quality circle party from Japan, followed by a return visit by American managers to Japan in 1973. They enjoyed considerable success, reporting a cost savings of \$3 million, tenfold reduction in defects, a 600 percent return on investment, and improved morale. Lockheed manufacturing manager Wayne Rieker, QC coordinator Donald Dewar, and QC training manager Jeff Beardsley advertised their success widely, preparing presentations at the American Society for Quality Control. All three ultimately left Lockheed to become business consultants setting up circles elsewhere.

The idea of QC circles generated little initial interest within American industry. In the mid-1970s, QC programs were located mainly in the aerospace and electronics industries and propagated mainly via interorganizational networks. For example, Lockheed managers suggested that their colleagues at Honeywell might find quality circles useful, and in turn Honeywell passed the idea on to Westinghouse.

As circles gained currency in the United States, they were renamed 'quality circles' (the term 'quality control circle' had some initial currency, but was gradually dropped from American discourse). The American quality circle model builds on its Japanese parent, but it also differed from it in crucial respects. First, while Japanese circles focused on quality control, American quality circles were understood as potentially addressing almost any workplace problem or issue. Second, while Japanese QC circles formulated and carried out workplace improvements, American quality circles centered on making recommendations to management.

These differences were not random copying errors, but instead modifications produced by the concerns, interpretive framework, and structural conditions of American business. Problematic issues included the undesirable connotations of 'control' for a participatory managerial practice, a desire to limit the role of the QC Department, the small role of foremen and cohesive work groups within American industry relative to Japan, and the oppositional character of management-labor relations. All of these conditions led quality circles to play a more passive role (see Cole 1989 for an extensive and insightful analysis).

Paul Lillrank (1995; Lillrank and Kano 1989) argues that American efforts at quality circles were further hampered because they wrenched the practice out of its organizational context. American managers were drawn to circles as a stand-alone technology whose success would flow naturally once the neglected resource of worker knowledge and cooperation was tapped. This view minimized the social and technical infrastructure needed to make circles self-sustaining over time. Lillrank (1995) provides a glimpse of the managerial infrastructure behind QC circles in Japan:

to keep the circles active and working on relevant problems, strict management guidance was necessary. For this, a parallel support structure was constructed, made up of steering committees at various levels. Top management strategies were broken down into objectives for each level. While most of the circles could still choose the topics to work with, management suggestions, annual policy proclamations, slogans and campaigns provided the circles with indirect guidance on what types of issues to focus on.

Quality circles took off within American organizations in the late 1970s and early 1980s, a time when Japanese dominance of core American markets had brought the search for 'Japanese management secrets' to a fever pitch. A national association (the inaccurately named 'International Association of Quality Circles') was established in 1978 and experienced exponential growth, doubling in membership until 1983 (Cole 1989: 183). As Figure 7.1 shows, journal articles on quality circles peaked in the United States in 1981 (Abrahamson and Fairchild 1999), as did business consultants listing quality circle services (Strang and Macy 2001: 150-1). Organizational surveys found quality circles in more than 40 percent of large manufacturers (Freund and Epstein 1984).

But the quality circle movement was short-lived within the United States, in sharp contrast to its longevity in Japan. In 1985 Lawler and Mohrman (1985) published a widely cited critique of quality circles in the *Harvard Business Review*, arguing not only that circles were relatively unprogressive but also that

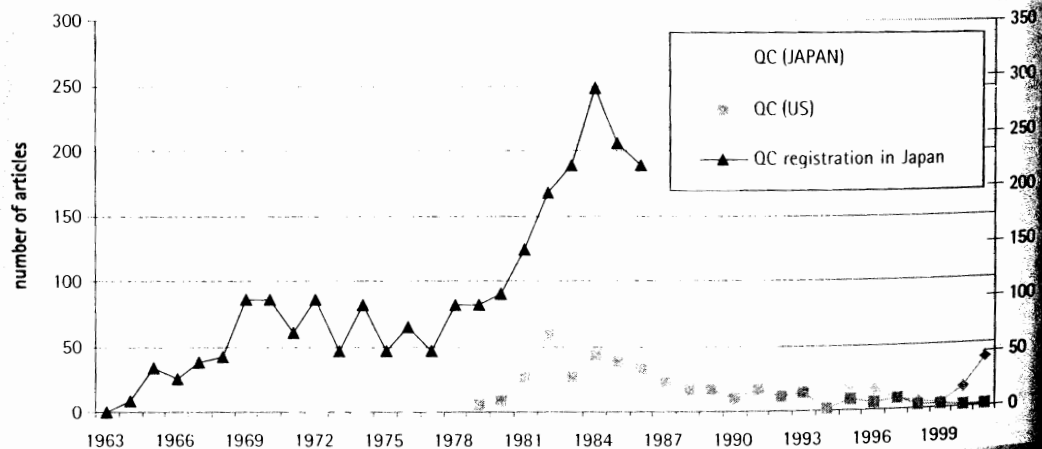


Fig. 7.1 QCC: Trends in Japan and the United States

Note: The original source for the number of QC registration is *Continuous Improvement* (Lillrank and Kano 1989: 231). The numbers of registrations are presented in hundreds in the right axis.

Everyone knows, it's a fad'. Attention in the business press and among consultants dwindled, and close inspection of quality circle programs showed them to be short-lived (Drago and Turnbull 1988). By the late 1980s, quality circles were added in American business discourse as an example of irrational exuberance gone bad.

American interest in quality circles did last long enough, however, to provoke a remarkable 'boomerang' in Japan. As Figure 7.1 shows, by the 1970s QC circles had become institutionalized in Japanese industry. High and consistent levels of activity are indicated by the fact that some 5,000 to 10,000 QC circles are registered each year. But very few articles on QC circles appeared in the Japanese academic or business press, suggesting that the approach had become taken-for-granted.

American attention to quality circles around 1980 led to a huge increase in Japanese QC circle discourse and activity. Apparently, Japanese managers and quality experts concluded that there must be something more to their ideas if the United States and the rest of the world took them so seriously! The number of QC circles in Japan increased about threefold, with some 300,000 circles registered with JUSE by 1984. And managerial discourse rose even more rapidly, reaching as many as 350 articles per year in 1983 before declining to 1970s levels at the end of the decade.

## 7.4 FROM JAPANESE COMPANY-WIDE QUALITY CONTROL TO AMERICAN TQM

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Japanese quality control circles were only one wing of a vigorous national quality control movement. While quality control circles mobilized foremen and front-line employees to measure and solve workplace problems, complementary strategies were promoted at other organizational levels as well. Senior managers established quality plans and emphasized the strategic opportunity to out-compete rivals on both quality and cost. Middle managers conducted quality audits that helped align these plans with production targets. Engineers sought to simplify work processes to simultaneously improve product quality and reduce cycle times. Marketing and design personnel sought to measure customer satisfaction and integrate consumer concerns into the design process.

Three main organizations promoted the development and spread of these quality control activities. As with quality control circles, the Japanese Union of

Scientists and Engineers played a core role. In addition, the Japanese Standards Association (JSA) and the Japan Productivity Center (JPC) organized workshops and published standardized QC texts, providing a common language and strengthening communication networks across Japanese firms. All three organizations were strongly linked to the Japanese state: most of the directors of the JSA and JUSE were former officials within MITI, and the JPC was sponsored by MITI.

Japan's new quality model marked a clear departure from traditional inspection and statistically based notions of quality control (see Cole 1999 and Hackman and Wageman 1995 for more detailed discussion). Features of the new approach included:

- *customer focus*: a proactive emphasis on introducing customer concerns and reactions into the definition of quality goals and integrating quality and design issues
- *process focus*: the notion that all aspects of what an organization does can be understood in terms of work processes that cross functional specializations
- *measurement focus*: an emphasis on 'management by fact' based on quantitative summaries and analysis
- *employee involvement and participation*: all employees should be directly and meaningfully involved in improving quality, in their own individual work, as members of production teams, and as contributors to various work processes
- *kaizen or continuous improvement*: a strategy of continually streamlining work processes and reducing production errors.

This complex of ideas and supporting practices became widespread in the 1960s, a period when trade liberalization reinforced the importance of product quality for Japanese firms (Nonaka 1995). In 1968 the term 'Company Wide Quality Control' (CWQC) was proposed to describe the evolving quality model.<sup>3</sup> Kaoru Ishikawa, the 'father' of Japanese quality control, defines CWQC as 'all-department participation', 'all-employee participation', and 'integrated process control' (1984).

American interest in Japan's company-wide quality methods was again delayed by about two decades. It is difficult to date this rise in the way that quality circles can be temporally located because both the new model and its reception in the United States were more complex. In fact, Cole (1999: 18–21) represents the growth of the new quality movement as a sequence of mini fads. For example, the quality circles boom was followed by attention to quality function deployment and Taguchi methods in the early 1980s, customer focus and continuous improvement in the mid-1980s, and annual objectives and ISO 9000 in the late 1980s.

<sup>3</sup> The Japanese approach had previously been described under the rubric of Feigenbaum's notion of Total Quality Control. TQC (*sogoteki hinshitsukanri*) and CWQC (*zenshatecki hinshitsukanri*) are almost indistinguishable in Japanese. Hence Western interpreters often use Japanese quality control or Japanese TQC to refer to CWQC.

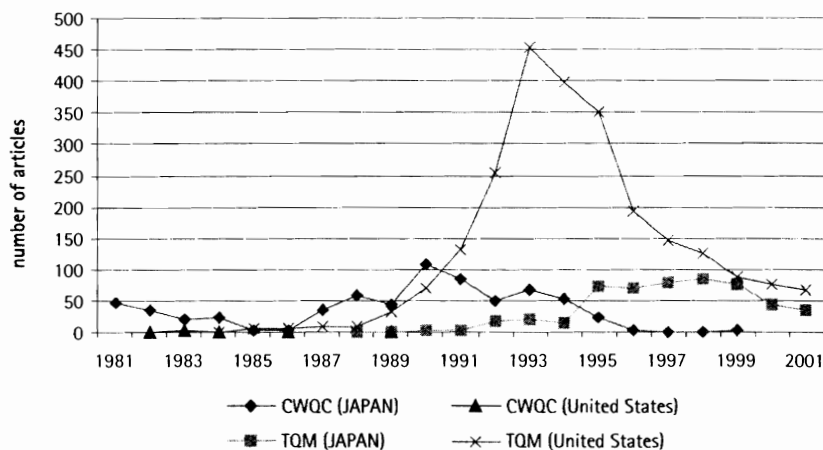
Overall, American efforts to learn from Japan's quality model came of age in the late 1980s. In 1987 the establishment of the Malcolm Baldrige National Quality Award signaled that the total quality movement had gained national prominence as well as the support of leading corporations. And in the late 1980s, the term 'total quality management' (TQM) gained currency as a way of integrating the complex of quality methods that American companies were learning from Japan.

As with quality circles, America's renewed attention to Japan stemmed in large part from Japan's competitive success. The US economy grew at a significantly slower pace than Japan's throughout the 1980s, with a severe dip at the end of the decade—just the time when American quality efforts coalesced around the Baldrige. Key industries like automobiles, electronics, and computer hardware continued to lose market share to Japanese firms both globally and domestically. And consumers continued to view the quality of Japanese products as significantly higher than those of American companies.

American TQM also grew out of lessons learned from earlier, more partial innovation attempts. While quality circles had failed in most firms, they laid the groundwork for more aggressive efforts by introducing the notion of quality as a 'strategic issue' and by sponsoring the growth of a consulting community with expertise in quality techniques. Philip Crosby's 'Zero Defects' program played a similar role in introducing many American companies to a homegrown version of quality management that combined traditional elements with newer ones (Cole 1999; Easton and Jarrell 1998). Quality 'gurus' such as Deming, Juran, and Feigenbaum became prominent during the quality circle fad, and these experts all argued that deeper managerial commitment was needed.

The quality journey was not a smooth one, however. Robert Cole (1999) details the difficulty that managers at Hewlett-Packard had in comprehending and following the Japanese quality model. Early on, HP managers faced strong psychological as well as cognitive barriers: they felt they had little to learn from the Japanese, and regarded the assumptions of the new quality model (particularly the lack of conflict between quality and other organizational goals) as implausible. During the 1980s, top manager communication of quality successes at HP-Yokohama stimulated interest in and acceptance of major elements of TQM in the manufacturer's American divisions. Nevertheless, Cole portrays even a quality exemplar like Hewlett-Packard as having learned to 'surf quality fads' rather than having established a coherent, well-institutionalized program.

Organizational surveys show widespread development of TQM in American industry by the late 1980s. Easton and Jarrell (1998) examine forty-four companies with 'advanced' TQM programs: of these, about half had begun implementation after 1985. Lawler, Mohrman, and Ledford's (1992, 1995) surveys of the Fortune 1000 indicated that about three-quarters had TQM programs in the early 1990s, with modest increases in usage and program coverage by 1995.



**Fig. 7.2 CWQC and TQM: Bibliometric trends in Japan and the United States**

Source: Database for Japan: Nichigai, <http://www.nichigai.co.jp>. Database for United States: ABI/Inform Global.

Figure 7.2 gives bibliometric trends in American and Japanese management discourse around new quality approaches for the last two decades.<sup>4</sup> It underlines the late but rapid rise of interest within the American business community. The boom in TQM discourse occurred in the late 1980s and early 1990s, with a peak in 1993. This peak was followed by a rapid falloff in interest, as the hype surrounding TQM lost credibility. This falloff can also be seen in the number of business consultants offering TQM services (David and Strang 2003), though the maximum number of TQM consultants occurred later and was followed by the stabilization of TQM services rather than a decline towards zero.

The Japanese bibliographic pattern shows a different pattern. Discussion of CWQC/TQM is stable over time, unlike the characteristically American 'boom and bust' cycle in business discourse. If we sum the two Japanese curves, there is little temporal variation between 1980 and 2000. What does change, however, is the label, with Japanese usage once again remarkably responsive to American managerial discourse. By 1994 the American term 'TQM' had become widespread in Japan, with the references to CWQC slipping into the background.

Figure 7.2 also reminds us that the overall level of Japanese management discourse is much smaller than that of American discourse. In 1993 we count some 450 articles focusing on TQM in American journals. By contrast, the largest number of

<sup>4</sup> American TQM articles included are those where 'TQM' or 'total quality management' appears in the title. (A keyword search on TQM retrieves a larger number of articles, but the trend over time little changed.) Japanese CWQC articles are those indexed by the keywords 'CWQC' or 'zenshū hinshitsukanri'. Japanese TQM articles are those indexed by the keyword 'TQM'.

TQM or CWQC articles published in Japan in any given year was 108. Over the twenty-year period, American references substantially outweigh Japanese references (6,872 to 2,863 articles).

While relative market size surely explains some of this differential, we think it is more importantly a product of the different ways that managerial innovation is organized in the two countries. In the United States, management practices are discussed in public forums, and academics, consultants, and journalists compete with each other to promote different ideas and techniques. In Japan, academia is less tightly connected to the business world and key organizations (like JUSE and JPC) promote management practices through direct contact with companies rather than within a public marketplace of innovation advocacy and debate.

At the level of concrete practices, American TQM is not readily distinguished from its Japanese parent. For example, an American-headquartered bank we observed implemented a total quality initiative between 1997 and 2000. This initiative involved training of all employees in a statistical language and methodology for analyzing error rates (Motorola's Six Sigma™ system), formation of more than a thousand cross-functional process improvement teams to reduce organizational errors and speed up work processes, measurement of organizational units on the basis of 'quality metrics' targeting customer interactions, and efforts to share information with suppliers. All of these practices are widespread in both Japanese CWQC and American TQM.

While many of the techniques involved in Japanese CWQC were followed in the United States, they were often implemented in a way that reversed core meanings. For example, Osterman (2000) found a positive correlation between TQM programs in the United States and employee layoffs, and a negative relationship between TQM and gain-sharing programs. The 'employee unfriendly' context of much American TQM contrasts with Japan, where at least until recently, quality efforts are supported by lifetime employment and cooperative labor-management relations (Nakamura and Nitta 1995).<sup>5</sup> Scholarly debate over TQM in the West has largely centered on whether it empowers workers or intensifies managerial control (see e.g. Adler 1993; Parker and Slaughter 1998; Wilkinson 1997).

Management-labor conflict is one reason quality programs are more fragile in the United States than in Japan. In studying the American-based multinational described above, for example, we were struck by how strongly program efforts and success varied across national settings. In the United States, the bank's quality initiative faced skepticism from managers and low rates of quality team formation

<sup>5</sup> Japanese firms avoided mass layoffs during the first oil shock in 1973 and the second in 1978. Although there were significant reductions in force during economic downswings in the 1980s, Japanese conglomerates sought to minimize their impact by transferring employees to subsidiaries or other affiliated firms. By the 1990s this strategy was no longer viable, and observers suggest that pillars of the postwar firm such as lifetime employment and seniority-based wages are no more (Numura 1998; Takeuchi 1998).

(Sine and Strang 2001; Strang 2003; Strang and Jung 2004). Many questioned whether the quality program would lead to downsizing. Tensions over the empirical meaning of 'empowerment' also ran high; for example, one team studied by the first author experienced much conflict over whether its high-ranking sponsor would control the team's communications.

By contrast, the bank's quality program was implemented extensively outside the United States. The largest volume of quality activity emerged in Southeast and East Asian operations, with teams from Japan and the Pacific Rim far exceeding American efforts despite the much greater scale of US-based operations. And most remarkably, Asian divisions within the bank continued to pursue quality team efforts despite the eventual loss of headquarters support for the program, while American activities tailed off rapidly once the program lost senior management support.

## 7.5 REGULARITIES IN DIFFUSION AND DOMESTICATION

The cases of scientific management, quality (control) circles, and CWQC/TQM provide both a historical record of connections between Japanese and American management and a set of examples of the diffusion of organizational practices. We comment on several apparent regularities.

First, the flow of practices from one country to another seems driven by performance gaps, where firms and entire business communities seek to learn from success (for discussions of performance gaps in American industrial history, see Abrahamson 1997; Barley and Kunda 1992 also see Strang and Macy 2001 for a formal model of emulating success). Japan pursued scientific management to learn from American industrial success in the 1910s and 1920s. American firms returned the favor in the 1980s and 1990s, when Japanese quality control circles and company-wide quality control were the focus of efforts in the United States to 'catch up with the Japanese'.

Japan and the United States cannot be described as equally susceptible to each other's practices, however. The Japanese business community was very quick in attending to and incorporating American management models, while the United States was reluctant to learn from Japan. Scientific management was rapidly disseminated in Japan, with Taylor's key treatise translated within a year and early development of an organizational infrastructure within Japan. By contrast



Japanese quality practices were introduced in the United States long after their development in Japan. Quality circles became popular in the United States more than fifteen years after their dramatic launching in Japanese industry, and it took more than twenty years for Japanese company-wide quality control to be recognized within the American business community.

Asymmetry is also evident when we consider 'boomerang' effects: how the exporter of management practices is affected by the diffusion of its ideas abroad. As far as we know, proponents of scientific management in the United States were uninfluenced by the interest their ideas generated in Japan. By contrast, Japanese business was keenly aware of American interest in quality circles and TQM. Japanese quality circle registrations skyrocketed after the American quality circle fad was launched, and the label of 'company-wide quality control' was discarded in Japanese management discourse in favor of the American label 'TQM'.

In an insightful discussion of the sources of American sluggishness, Cole (1998) emphasizes the emotional as well as cognitive difficulty that American managers had in acknowledging that they had something to learn from Japan. More structurally, America's early technological lead and often hegemonic position within the global economy and polity promoted an internal focus. Japan's late industrialism and politically subordinate position after World War II led to an emphasis on learning from abroad (for a more general argument about the impact of national position within the global economy, see Arias and Guillen 1998).

Asymmetries in diffusion appear on a broader scale as well. One can argue that the American business community is relatively unsusceptible to external influence but at the same time highly infectious. This is particularly evident if we consider the dominant position of the United States in international consultancy, business education, professional associations, and organizational research. For example, Engwall (1998) details trends towards homogenization of management models within Europe and the leading role of American management journals and texts.

These differentials in responsiveness notwithstanding, organizational practices moved from Japan to the United States as well as from the United States to Japan. In both cases, we are struck by the fact that practices were not imported wholesale. Instead, foreign management practices were domesticated in transit.

A good example of domestication is the way Americans reinterpreted Japan's autonomous quality control activities based on small groups within the workplace as voluntary groups that made recommendations to management. 'Sponsored but autonomous' QC circles made little sense in American firms lacking a strong foreman role and experiencing sharp labor-management conflict. Similarly, Japanese business was enthusiastic about scientific management techniques like time and motion study, but not about its emphasis on piece-rate incentives.

Firms and innovation experts in each country thus selected from those components of foreign management, the ideas that appeared most compatible with domestic concerns and agendas. In Japan, scientific management was assimilated

into efforts to maintain a preindustrial sense of community, while in the United States Taylorism was presented as an alternative to hoary notions of industrial betterment (Barley and Kunda 1992). American firms combined TQM with downsizing, making its implementation an occasion for intensified rather than reduced workplace conflict.

The domestication of diffusing practices provides an opportunity to see 'institutions' in action. As Guillen (1994) argues, institutions are both cognitive models for behavior and structures of power. For example, American managers and consultants developed a simplified, context-independent notion of the quality circle that fit American notions of 'participatory management'. And the oppositional structure of American labor relations and the hegemonic position of top management led American TQM to be combined with downsizing rather than revive the notion that employment represents an implicit social contract.

Finally, the United States and Japan possess qualitatively different 'diffusion infrastructures': patterned ways of learning about and disseminating new practices (see Cole 1989 for insightful discussion along these lines for the case of small group activities). In the United States, all three practices described here spread via a decentralized market for organizational innovation. Frederick Taylor, the Gilbreths, and a horde of 'efficiency experts' touted their own versions of scientific management after the turn of the century. A flurry of independent consultants from Lockheed and elsewhere promoted quality circles, and TQM's early spread involved competition between gurus like Feigenbaum, Juran, and Deming. This competition occurred in a very public way through the business press as well as less visibly through managerial networks.

In Japan, by contrast, corporate innovation was promoted in centralized fashion by publicly supported organizations. The Industrial Research Institute, the Japanese Union of Scientists and Engineers, and the Japanese Standards Association all enjoyed a combination of government and corporate sponsorship that no American consultant could lay claim to (and that rivals would have sharply attacked as 'un-American' if it had). These associations directly promulgated best practices through ties to top managers and leading corporations rather than through a media free-for-all.

These different modes of innovation diffusion are obviously related to the contrast between the 'boom and bust' cycle characteristic of American managerial innovation versus the Japanese pattern of relative stability and internal evolution. In the United States, consultants tend to converge on popular innovations, increasing the volume of unsustainable claims as competing advocates seek to distinguish their approach and undercut their rivals. Since an innovation's popularity raises managerial expectations while diminishing average levels of consultant experience and expertise, a proclivity towards faddish cycles is reinforced (David and Strang 2003). In Japan, by contrast, direct ties between peak associations of experts and

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major firms generate better prospects for 'continuous improvement' (though perhaps fewer new ideas).

## 7.6 CONCLUSIONS

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This chapter has examined the spread of managerial practices between Japan and the United States, possibly contributing to overmuch attention to this particular dyad. After all, cross-national diffusion is marked by multiple centers of innovation and varied relationships between exporters and importers of practices. The ISO 9000 movement, for example, is strongest in the United Kingdom, Europe, and the British Commonwealth (Mendel 2002), with the number of countries issuing certificates rising from 48 to 129 between 1993 and 1997 (Guler, Guillen, and Macpherson 2002).

We have also focused on a specific set of organizational practices. Scientific management, quality circles, and TQM are all 'named' innovations that received extraordinary levels of attention, and their patterns of spread may differ from those of practices perceived to be simply 'business as usual'. And the story could be continued: in particular, analysis of the Japanese reception of the practices described by Kunda and Ailon-Souday (in this volume) as 'market rationalism'—reengineering, downsizing, and outsourcing—would extend and test the argument developed here.

Of the lessons suggested by the three instances of diffusion examined here, we put particular stress on two. The first is the stability of diffusion mechanisms over time. It is often argued that the world has entered a new and qualitatively different phase of globalization, that in the words of one wag 'the whole world is going global'. While the growth of a global community of management experts deserves close attention, we would emphasize continuities over the twentieth century. The spread of managerial practices across countries is not a new phenomenon. In fact, the diffusion of scientific management from the United States to Japan was in many ways more rapid and extensive than the reverse flow of quality methods more than a half century later.

Second, the process of diffusion provides a site for studying the sources of national difference as well as the sources of convergence and homogenization. Firms and organizational communities do not blindly imitate the managerial practices of other countries. Instead, they interpret them in light of their own theories of effective action and implement them in ways that reflect power relations within the firm. The history of connections between American and Japanese

managerial practices can thus be read as an account of the reproduction of characteristic modes of work within each country.

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