The new organisation

Also in this section

Acknowledgments
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A list of sources can be found online
www.economist.com/surveys

An audio interview with the author is at
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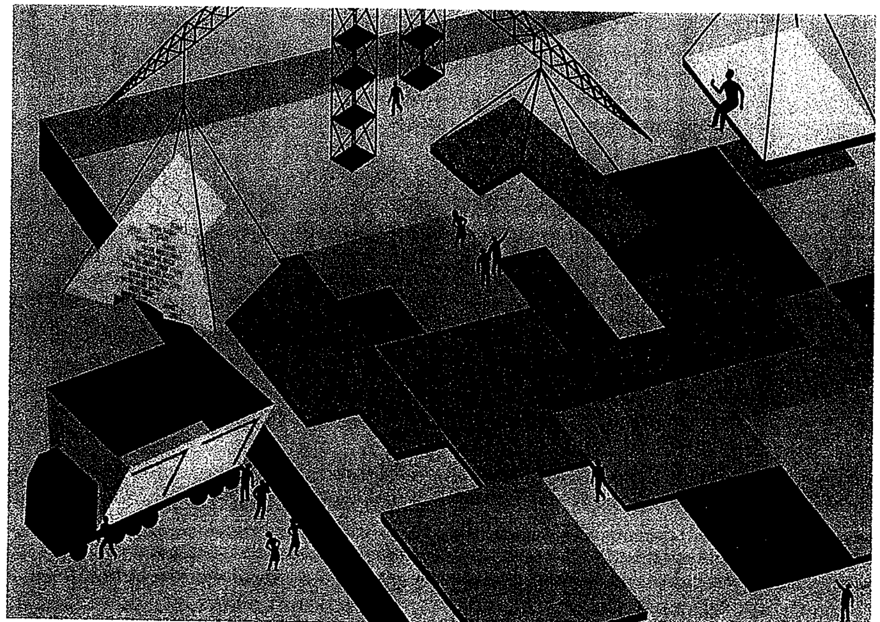


The way people work has changed dramatically, but the way their companies are organised lags far behind, says Tim Hindle

FIFTY years ago William Whyte, an editor at *Fortune* magazine, wrote a book called "The Organisation Man" that defined the nature of corporate life for a generation. The book described how America (whose people, he said, had "led in the public worship of individualism") had recently turned into a nation of employees who "take the vows of organisation life" and who had become "the dominant members of our society".

Foremost among the organisations that Whyte had in mind was the corporation, which he thought rewarded long service, obedience and loyalty quite as faithfully as did any monastery or battalion. "Blood brother to the business trainee off to join DuPont is the seminary student who will end up in the church hierarchy," he wrote. The *New York Times* praised Whyte for recognising that "the entrepreneurial scramble to success has been largely replaced by the organisational crawl."

Half a century on, organisation man seems almost extinct, though occasionally he can still be spotted in Hollywood. In "The Hours", a 2002 Oscar-winning film, the actor John Reilly plays a character who lives in a 1950s Los Angeles suburban bungalow, just as Whyte's organisation man lived in "the new suburbia, the packaged villages that have become the dormitory of the new generation of organisation men". Mr Reilly is waved off to work every morning by his young son and his faithful wife, played by Julianne Moore. His shirt is white and his suit and tie are dark, broken only by the line of a white handkerchief in his breast pocket. He spends all day in an office with the same small group of people and returns home each evening at the same time. "This is perfect," he says of his life over dinner one evening.

The company that used to be most closely identified with this way of life was IBM. For many years its managers wore only dark blue suits, white shirts and dark ties, symbols of their lifetime allegiance to Big Blue. It is some measure of the change that has taken place since Whyte's day that today 50% of IBM's employees have worked for the company for under five years; 40% of its 320,000 employees are "mobile", meaning that they do not report daily to an IBM site; and about 30% are women. An organisation that was once dominated by lifetime employees selling computer products has been transformed into a conglomeration of transient suppliers of services. Organisation man has been replaced by a set of managers much more given to entrepreneurial scramble than to organisational crawl.

This transformation has been brought about by a variety of changes in the environment in which businesses operate, particularly in communications technology, in the globalisation of production and sales, and in the large-scale shift of responsibility to outsiders for what were once ▸▸

The matrix master

Philips redraws the lines

PHILIPS, a Dutch electrical giant, was one of the earliest champions of the matrix structure. After the second world war it set up both national organisations and product divisions. The boss of the washing-machine division in Italy, say, would report to the head of Philips in Italy as well as to the washing-machine supremo in the Netherlands. This network was loosely held together by a number of co-ordinating committees designed to resolve conflicts between the two lines of command.

By the 1990s Philips had decided that this structure was no longer working well. There had been more or less continual problems over accountability. Who was to be held responsible for the profit-and-loss account—the country boss or the product head? For a while, the country heads had had the upper hand, but the product bosses had fought back. A reorganisation in the early 1990s created a number of units with worldwide responsibility for groups of the company's businesses—consumer electronics, medical products and so on. The national offices became subservient to these new units, built around products and based at the firm's headquarters.

Gently does it

In the past three years the company has been gently drawing back from this structure without attempting a radical reorganisation. For instance, it has appointed a chief marketing officer to help counter the criticism that it has been paying too much attention to technology and new products and not enough to its customers.

Gerard Ruizendaal, head of corporate strategy at Philips, says the company has learnt that whenever it creates a new organisation, it creates a new problem. So, under the slogan "One Philips", it has introduced a number of low-key changes, such as encouraging employees to work across different business units. In November, it handed out awards for three business initiatives in which people had created value for the company by collaborating with others outside their immediate units.

Philips is also making it clear that employees are expected to move around in their careers rather than stick with a single geographical region or product area. Mr Ruizendaal says that 70-80% of the changes required will come about by shifting managers' attitudes; the rest from putting in place incentives, not all of them monetary. To help change minds, Philips last year brought together its top 1,000 managers for a series of workshops expressly designed to talk about issues that cut across organisational boundaries.

considered a company's core functions—via outsourcing, joint-ventures and other sorts of alliances that involve a loosening of control over vital inputs.

Whyte, who died in 1999, would have enjoyed witnessing organisation man's metamorphosis into "networked person", a species that can now be observed in airport lounges, on fast inter-city trains and at motorway service stations. Networked person is always on the move, juggling with a laptop computer, a mobile phone and a BlackBerry for e-mails, keeping in electronic touch with people he (and increasingly she) no longer regularly bumps into in a corridor. Indeed, there may be no corridor. These days, many employees besides IBMers no longer have a physical home base in a building provided by their employer.

Organisation man did bump into people in corridors, but he was cautious about networking. In his world, knowledge was power, and he needed to be careful about sharing out his particular store of it. He found comfort in hierarchy, which obviated the need to be self-motivating and take risks. He lived in a highly structured world where lines of authority were clearly drawn on charts, decisions were made on high, and knowledge resided in manuals.

Networked person, by contrast, takes decisions all the time, guided by the knowledge base she has access to, the corporate culture she has embraced, and the colleagues with whom she is constantly communicating. She interacts with a far greater number of people than her father did. A famous 1967 study by Stanley Milgram (which later became the basis for a film) suggested that there were at most "six degrees of separation" between any two people in America, meaning that the chain of acquaintances between them never had more than six links. According to more recent work along similar lines, that number has now fallen to 4.6, despite the growth in America's population since Milgram's study. Being able to keep in touch with a much wider range of people through technologies such as e-mail has brought everyone closer.

And yet despite the dramatic changes in the way people work, the organisations in which they carry out that work have changed much less than might be expected. In an article in the *McKinsey Quarterly* last year, Lowell Bryan and Claudia Joyce, two of the firm's consultants, argued that "today's big companies do very little to enhance the productivity of their professionals. In fact, their vertically oriented organisational structures, retrofitted with ad hoc and matrix overlays, nearly always make professional work more complex and inefficient." In other words, 21st-century organisations are not fit for 21st-century workers.

Mercer Delta, a consulting firm that specialises in "organisational architecture", recently observed that "the models and frameworks that shaped our leading organisations from the end of the second world war through the conclusion of the cold war are clearly obsolete in this new era of e-business, perpetual innovation and global competition." The design of today's complex enterprises, says Mercer Delta, requires an entirely new way of thinking about organisations.

The classic structure in which organisation man felt comfortable consisted of a number of business units that operated similarly but separately. They were controlled by a head office that determined strategy and watched over its implementation. It was a system of command and control in which everybody knew his place, made visible in the organisation charts that laid down the corporate hierarchy.

A surprising number of companies today still have much the same command-and-control structure that they had 50 years ago. According to the Boston Consulting Group, what it calls "the imperialist corporate centre" is still the most common type of headquarters. And companies that do decentralise decision-making and accountability often recentralise it again when they run into trouble.

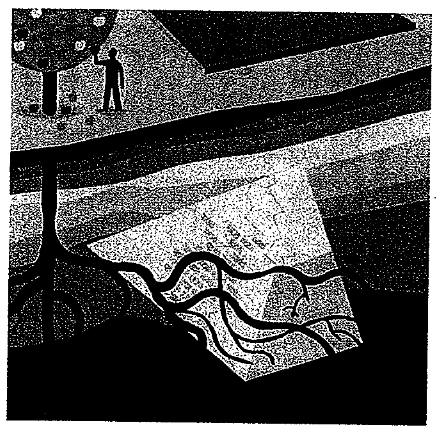
Twenty years ago, Motorola, a co-inventor of the mobile phone, was a tightly centralised business. Three men in its headquarters at Schaumburg, Illinois (including Bob Galvin, the founder's son), were in control of almost everything that went on. As the company grew, they decided to decentralise. But by the mid-1990s the company's mobile-phone business was growing so fast that decentralisation made it impossible to control. "While the numbers are getting better, an organisation can be falling apart," says Pat Canavan, Motorola's chief governance officer. In 1998 the company laid off 25,000 people and repatriated control to the Schaumburg headquarters.

The trouble with silos

The main failing of the classic structure was that it impeded the spread of knowledge and limited the economies of scale that could be reaped. Ideas and commands moved up and down from headquarters to the units, leading to the creation of vertical "silos" with very little communication between them. Financial-service institutions were notorious for not knowing whether customers who signed up for one service were already customers for other services being provided by the same institution.

As firms became more global, they added what McKinsey called a "matrix overlay" to this structure. Most famously associated with Philips, a Dutch electrical and electronics giant (see box, previous page), this attempted to take more account of the different national markets in which a company was operating by superimposing geographical silos that cut across the traditional business units.

Such organisations have not commanded universal admiration. In 1990, in a paper published by the *Harvard Business Review*, Sumantra Ghoshal and Christopher Bartlett, two academics, reported that matrix structures "led to conflict and confusion; the proliferation of channels created informational logjams as a proliferation of committees and reports bogged down the organisation; and overlapping responsibilities produced turf battles and a loss of accountability." Nigel Nicholson, a professor of organisational behaviour at the London Business School, called the matrix structure "one of the most difficult and least successful organisational forms."



Messrs Ghoshal and Bartlett wrote in the past tense, suggesting that companies had escaped from the matrix corset. But 15 years after the article was published, many are still trying to struggle free.

Gerard Fairtlough, a former CEO of Shell Chemicals and the founder of Celltech, a British biotechnology company, also suggests that companies are still being held back by their addiction to hierarchy. In a recent book, "The Three Ways of Getting Things Done", he points to alternatives to the hierarchical structure that many companies see as their only option.

"You can't have a bunch of hippies running a plant full of explosive hydrocarbons," he says. "But would you rather have the plant operated by trained professionals, for whom pride in safe working is part of their personal identity, or by people who only work safely because they are afraid of the boss? The identification of discipline with hierarchy is a dangerous mistake." Mr Fairtlough's preferred alternative is something he calls "responsible autonomy", a form of organisation in which groups of workers decide for themselves what to do, but are accountable for the outcome.

Clearly there is a need for new kinds of organisation that are more appropriate to modern working methods. But there are many reasons why companies are not in a hurry to adopt them. ■

Take a deep breath

The best time to embrace radical change is when you are down

ONE reason why so many companies stuck to their old organisational structures for so long is that they still seemed to be working. General Electric under Jack Welch was one example. Emerson, an electric and electronics business based in St Louis, was another.

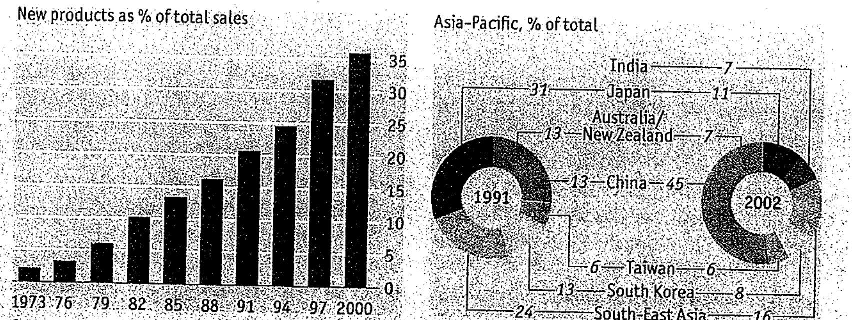
Emerson's story was recounted last year in "Performance without Compromise", a book written by Charles "Chuck" Knight, the man who led the company through most of an unbroken run of continually rising earnings per share between 1957 and 2000. At first sight, Emerson looks like a company in which organisation man would feel at home. "Planning and control are central to the way Emerson works," according to Mr Knight. More than half his time was taken up with planning, much of it spent in long, confrontational meetings with the company's division heads, where budgets and projections were torn apart and redrawn. This compelled the company to maintain a relatively large number of staff at its headquarters in St Louis.

Emerson's employees are loyal. The average length of service of its top 15 managers is a hefty 26 years, and promotion tends to be from within. Communication, says Mr Knight, is kept to a minimum: "Our planning and control cycle provides ample opportunity to communicate the most important business issues...we don't burden our system with non-essential communications and information."

The company's success was, on Mr Knight's own admission, the fruit of a long, hard slog. A little light relief was pro- ▸▸

One road to riches 1

Emerson's sales



Source: *"Performance without Compromise"*, by Charles F. Knight, Harvard Business School Press

vided by an annual golf tournament for top executives and important customers—"a great way for our people to bond with each other," according to Mr Knight. Not surprisingly, the Emerson story features very few women. All in all, the company sounds like the sort of command-and-control organisation that has outlived its effectiveness.

Yet Emerson continues to be successful. Its secret seems to be that, notwithstanding the title of Mr Knight's book, it has in fact been prepared to compromise. In the 1990s, for example, the company set up account teams to deal with big customers who bought from several of its divisions. The teams cut across the company's long-standing organisational boundaries. The purpose, says Mr Knight, "was to allow the customer to see Emerson as a single integrated supplier rather than a collection of independent divisions."

The company has also set up a design-engineering centre in India, invested heavily in China and hired some of the most progressive advisers on strategy and leadership development. Its current CEO, David Farr, spends more time with customers than did his predecessor. In short, Emerson, despite first impressions to the contrary, has changed quite a lot over the years. As Mr Knight puts it: "We succeeded in combining impressive consistency *and* fundamental change" (his emphasis).

The uses of adversity

By and large, though, successful companies find it a lot harder to restructure than those that have less to lose. Organisations are strongly inclined to carry on with "the way things are done around here" unless they have compelling reasons to stop. It is little wonder, therefore, that many of the recent pioneers of new organisational structures were in deep distress when they introduced them.

One example is BP, an international oil giant that was close to bankruptcy in 1992 when Lord (John) Browne, then head of the company's oil-exploration division (known as BPX), set out to restructure his fief. The choice was stark: radical change or extermination. In the best recent book on new corporate architecture, "The Modern Firm", John Roberts, an economist at Stanford, describes the reorganisation at BPX as "disaggregation".

Its key elements, he says, "involve redrawing the horizontal and vertical boundaries of the firm to increase strategic focus; creating relatively small sub-units within the organisation in which significant decision-rights are lodged; and decreasing the number of layers of management and the extent of central staff."

Accountability and responsibility for performance at BPX were pushed down to the level of the company's individual oil fields. Previously performance measures had been aggregated by geographic region, leaving managers further down the line with little idea of how well they were doing, and little incentive to do better. When early experiments with disaggregation showed that it increased output and brought down costs, it was introduced across BPX, and then across the whole of BP after Lord Browne became CEO of the whole company in 1995.

The oil giant had traditionally had a highly centralised hierarchical structure, but Lord Browne cut its head-office staff by some 80% and pushed decision-making down to 90 newly established separate business units. The hierarchy was flattened so much that the head of each of the 90 units reported directly to the company's nine-man executive committee—though as BP subsequently grew through takeover, some intermediate layers were introduced again. Individual managers also had much of their head-office support removed. The top of their silo had suddenly been lopped off.

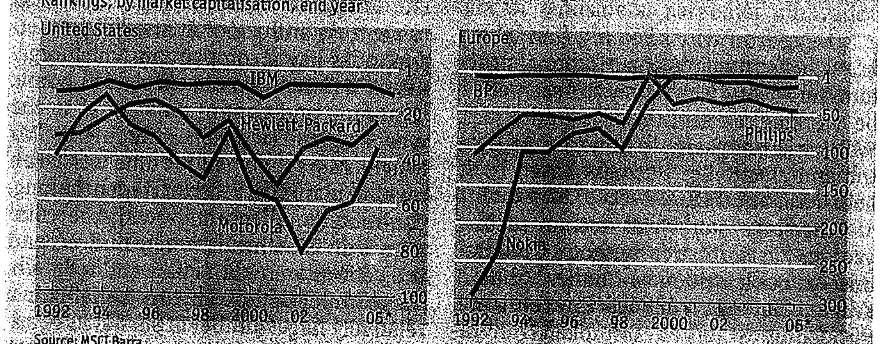
To discourage the silo mentality further, horizontal links were set up between the units. BPX's assets were split into four groups, roughly reflecting the stage they had reached in their economic life. Members of each group thus faced similar commercial and technical issues, and were encouraged to support others in their group and help solve each other's problems.

Mr Roberts says that these changes in "the architecture and routines eventually led to fundamental cultural changes. BP's people developed a deep, intrinsic dedication to delivering ever-improving performance. Strong norms emerged of mutual trust, of admitting early when one faced difficulties and seeking assistance when needed, of responding positively to requests for help, of keeping promises about performance."

As part of the reorganisation, some assets were sold off and BP's total staff was cut from 97,000 in 1992 to just over 50,000 three years later. Over the past decade the ▸▸

How to succeed by really trying 2

Rankings, by market capitalisation, end year



Source: MSCI Barra

*November

company's stock has performed exceptionally well.

Like BP, Philips was in deep financial trouble when at last it began to take down its long-standing matrix structure in 1991 (see box, previous article). And IBM in 1992 recorded the biggest loss to date in corporate history, which prepared the ground for Lou Gerstner to give Big Blue a new strategy—to concentrate on services—and a new structure to go with it. Likewise, Nokia in 1992 was a hotch-potch conglomerate, with products ranging from rubber boots to television sets, and going nowhere. It switched its strategy to specialise in telecommunications and built a new structure to go with it. Today Nokia and BP are two of Europe's most valuable companies, and IBM is once again one of the world's most admired companies.

"Organisational innovations, when properly applied, do lead to better economic performance, affecting the material well-being of the people of the world," says Mr Roberts. "Moreover, they alter the ways work is done, changing people's lives." Structure matters. Much of the large increase in the ratio of firms' stockmarket value to their book value since the early 1990s is due to the market's growing awareness of the role of human and organisational capital in the creation of value. For companies such as Wal-Mart and Dell, their structure is their main source of competitive advantage. For companies currently in difficulty, such as General Motors and the big American airlines, structural reorganisation will be a necessary part of any recovery. ■

The tortoise and the hare

The search for innovation

WHY would a healthy and successful company want to subject itself to a long and painful process of restructuring? In telling Emerson's story, Mr Knight hints at an answer. In the early 1990s, the company decided to separate its "planning for profit" from its "planning for growth". Previously its management's efforts had been concentrated mainly on paring costs and improving margins. But Emerson realised that it was time to "emphasise new products, new markets and new customers".

Many companies today are in the same position. They are emerging from a long period when their main concern was to cut costs and improve their balance sheets after the dotcom bust. Squeezing costs has dramatically improved profits: in each of the last three quarters of 2005, earnings per share of companies in the S&P 500 index were around 20% up on the same period in the previous year.

Now firms are trying to expand and find new customers. They are beginning to pay less attention to their bottom-line profits and more to their top-line revenues. A recent survey by the Conference Board, an association of American businesspeople, puts "sustained and steady top-line growth" at the top of the list of American CEOs' concerns.

The fun of the new

Pushing up revenues is more fun than cutting costs. It involves doing or buying new things, and the temptation is always to do this too soon and too enthusiastically. A.T. Kearney, a consulting firm, argues that growth of revenue and of profits are interrelated. In studying the performance of a group of big global banks between 1996 and 2003, it found that very few of them were able to increase shareholder value by more than 15% per annum without increasing their top-line revenues to match. A recent study by McKinsey came up with a similar finding: that a company "whose revenue increased more slowly than GDP did was five times more likely to succumb, usually through acquisition, than a company that expanded more rapidly." The choice for corporate bosses seems to be: grow or be gobbled.

In essence, there are two ways of achieving top-line growth: companies can buy it through mergers or acquisitions, or they can generate it internally. To do the second, they need to innovate.

In an American magazine-editors' poll last year to find the 40 best covers of the past 40 years, the single example from *The Economist*, dating from 1994, was headed "The trouble with mergers" and featured two camels coupling awkwardly. The article that went with it explained why most mergers go wrong. But mergers have become no more extinct than camels. Last year was a bumper one for cross-border acquisitions in Europe, and in America the value of telecoms deals alone was over $100 billion. Nevertheless, it remains extremely difficult to make mergers work.

There is some evidence to suggest that companies are becoming better at it. Some of them have set up special mergers-and-acquisitions units, manned by experts in the skill of post-merger integration. Motorola has introduced a systematic review of every acquisition three years after the event to see what lessons can be learnt.

What may also have helped is that with money relatively cheap, more deals today are being financed with cash than with the buyer's stocks and shares (the method favoured during the stockmarket bubble at the beginning of this decade). This tends to concentrate buyers' minds more sharply on the value of their acquisition.

Go organic

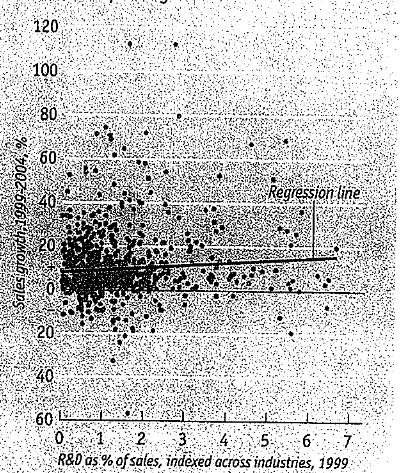
Yet there is a limit to the amount of top-line growth that can be bought. A recent report from A.T. Kearney says that "in some industries, significant growth is still possible through acquisitions. But the unavoidable reality is that long-term advantage also requires skills at creating organic growth." This need to create internal growth is driving companies to search for ways of making their people more creative and more productive.

The problem is particularly pressing for the big oil companies. Unless they merge with one of their own number, which may well be ruled out by antitrust considerations, no acquisition can make more than a marginal difference to their top line. Some other industries, such as food retailing in Britain, face the same dilemma. For Tesco, as for BP, the only real option for growth is organic.

At the heart of organic growth lies innovation: new ideas to develop new products and new markets. In the past, innovation took place mostly in the R&D department. In a paper written in 2001, Baruch Lev, a professor of accounting and finance at New York University, wrote: "Much of the research in the field of intangibles deals with R&D, which is just one—

Don't throw money at it 3

Sales v R&D spending



Source: Booz Allen Hamilton Survey of Global Innovation 1000

albeit important—form of intangibles. The reason for the R&D focus of researchers is simple: R&D is the only intangible asset that is reported separately in corporate financial statements."

In fact, the men in white coats have not been doing very well with their new pills and gadgets in recent years. A study in 2005 by consultants at Booz Allen Hamilton, the most comprehensive effort to date to assess the influence of R&D on corporate performance, concluded that "there is no relationship between R&D spending and the primary measures of economic or corporate success." What matters is not how many R&D dollars you spend, say the authors, but how you spend them.

Most of the innovation in pharmaceuticals these days is coming from small new firms. Big Pharma's R&D activity is now concentrated as much on identifying and doing deals with small, innovative firms as it is on trying to discover its own blockbuster drugs.

Traditionally, innovation has taken place either in the laboratory or in the marketing department. The laboratory may have proved sterile in recent years, but the marketing department has been a hive of creative activity, with endless new products and product extensions pouring out. The iPod digital music player, for instance, was quickly followed by the even smaller iPod nano; the Kit Kat chunky chocolate bar by the caramel Kit Kat chunky bar.

Yet there is a limit to this process too. In an article last year in the *Journal of Economics and Management Strategy*, Dipak Jain, dean of the Kellogg business school, and Michaela Draganska, an academic at Stanford, claimed that too many product extensions can have an adverse effect on overall market share and push up costs. Producers as well as consumers, it seems, can have too much of a good thing.

Look high and low

Where else, then, can companies turn for innovation? Many of them are now formally looking outside their own organisations. Joint-ventures and in-house venture-capital funds enable them to take a stake in potentially interesting ideas without the full risk of developing them. Motorola has four main outside sources from which it hopes to draw new ideas: universities, where it funds research in areas of interest to it; government bodies, to which it applies for research grants; small and medium-sized enterprises, from which it licenses or buys new ideas; and its own in-house venture-capital fund, some of whose investments may come up trumps.

Sometimes innovation can take unusual forms. Adrian Slywotzky, a consultant at Mercer and author of a book entitled "How to Grow When Markets Don't", tells the story of Air Liquide, a French manufacturer of industrial gases that has been innovative in an unconventional way and has grown dramatically as a consequence. The company found itself in a mature business where it had little hope of coming up with new products. So it turned itself from a simple maker of gas into a provider of energy services to its customers (mainly large corporations), and managed to persuade many of them to outsource all their energy needs to it. For several years thereafter, Air Liquide managed to chalk up double-digit growth in both revenues and profits.

The story is reminiscent of that of IBM, which switched from being a provider of hardware to being a supplier of services to users of similar hardware. It built a new business by supplying its existing customers with something different in which it could reasonably claim expertise. Between 1994 and 2003, IBM notched up mainly organic annual growth of 15-20% in revenue from services. Over the same period, the proportion of the company's total revenues that came from services rose from 25% to almost 50%.

All this goes to show that innovation can be a quite a simple thing. It does not reside only in the minds of brilliant but nutty scientists, or of creative luvvies in marketing departments and advertising agencies. It can blossom almost anywhere in an organisation that is properly structured to encourage it. ■

Thinking for a living

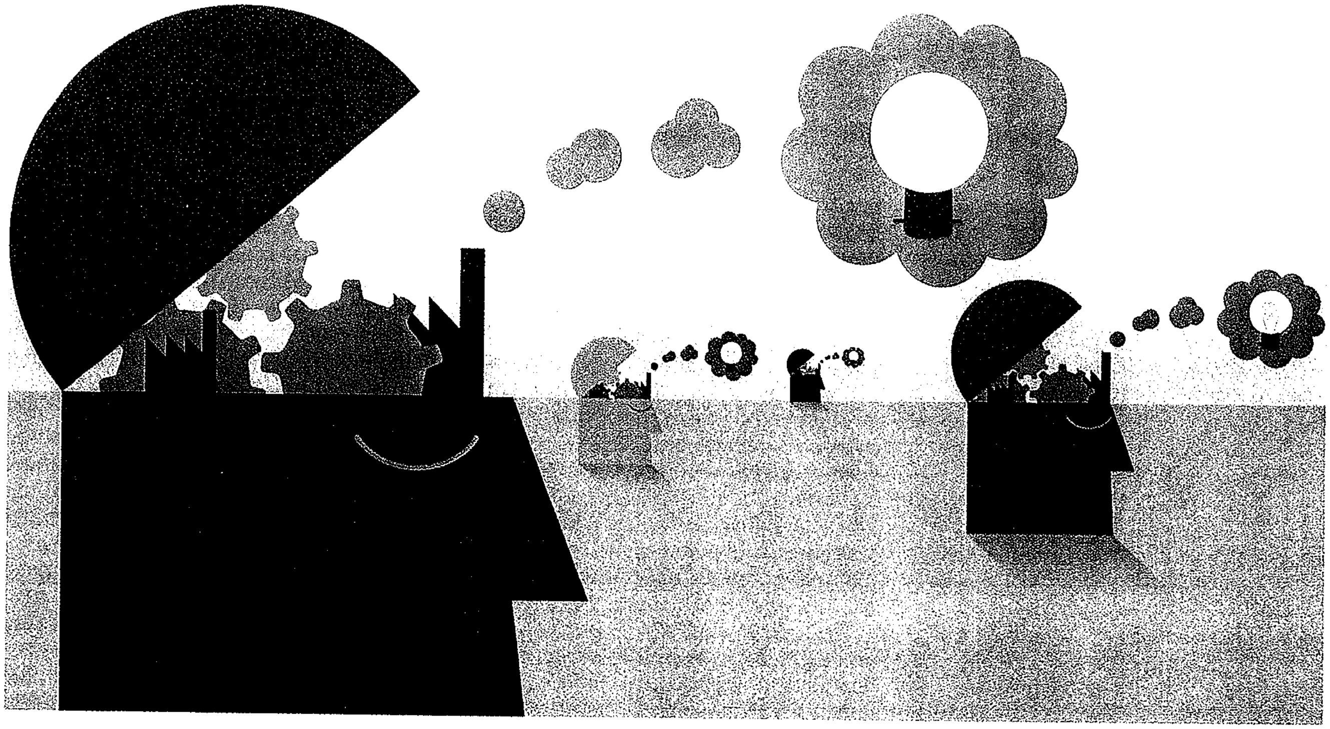
Knowledge workers need a new kind of organisation

CENTRAL to much thinking about how organisations should be restructured for the 21st century is the idea that innovation and growth will depend more and more on so-called knowledge workers, the sort of people who, to quote the title of a recent book by Thomas Davenport of Babson College, Massachusetts, find themselves "Thinking for a Living".

Lowell Bryan and Claudia Joyce at McKinsey reckon that knowledge workers (whom they prefer to call "professionals") "represent a large and growing percentage of the employees of the world's biggest corporations". In some industries, such as financial services, media and pharmaceuticals, they think the share may already be as high as 25%.

Others would put it much higher. One of the secrets of Toyota's success, says Takis Athanasopoulos, the chief executive of the Japanese carmaker's European operations, is that the company encourages every worker, no matter how far down the production line, to consider himself a knowledge worker and to think creatively about improving his particular corner of the organisation (of which more later).

In one sense, the organisation in which every member is a knowledge worker already exists: it is the professional-service firm, the organisational structure favoured by lawyers, accountants and consultants. ▸▸



Most such firms are organised as partnerships or quasi-partnerships, where strategic decisions are made democratically at regular get-togethers of the partners.

That is not a practical way to run a multinational company with hundreds of thousands of employees in dozens of countries. But in small ways, technology is already helping big firms to treat their employees more like partners. IBM recently held a 72-hour online chat session (which it called a "jam") among employees from 75 different countries to discuss the company's values, and plans to hold more. "Jams enable a kind of mass collaboration and problem-solving that has simply never before been possible on a global scale," says Irving Wladawsky-Berger, the company's vice-president of technical strategy and innovation.

McKinsey's Mr Bryan soberly points out that we are not all knowledge workers yet. "Fifty per cent of workers are still modern versions of old-style factory workers," he says. They still live off their brawn rather than their brain, and they may be able to live happily with organisational structures that are, as Mr Bryan puts it, "retrofitted with ad hoc and matrix overlays", and that are ill-suited for knowledge workers. Today's complex firm may need a new matrix, with one structure for its knowledge workers and another for its more traditional workforce.

However defined, the knowledge worker is not exactly a new invention. In one of his more prescient moments, Peter Drucker, the great management thinker who died last November, wrote: "To make knowledge-work productive will be the great management task of this century, just as to make manual work productive was the great management task of the last century." The date was 1969, and by "this century" he meant the 20th.

Taylor-made

The task he referred to had been begun by Frederick Winslow Taylor, an American Quaker who had devised what he called "a piece-rate system" while working for the Bethlehem Iron Company in the late 19th century. Drucker said that Taylor was the first man who "did not take work for granted, but looked at it and studied it." Through his study, he "sparked the revolution that allowed industrial workers to earn middle-class wages and achieve middle-class status despite their lack of skill and education".

Drucker was calling for another revolution, one that would make knowledge workers more productive, but he was still waiting for it when he died. Mr Davenport puts his finger on one of the key problems: measuring the output of knowledge workers. How, for instance, do you measure the value of a string of ideas coming out of a marketing department?

If knowledge worker A works for ten hours and knowledge worker B for eight hours, most people will assume that B has the easier job, not that he is more efficient at it. "Alas," writes Mr Davenport, "there is no Frederick Taylor equivalent for knowledge work. As a result we lack measures, methods and rules of thumb for improvement. Exactly how to improve knowledge-work productivity...is one of the most important economic issues of our time."

One way, he suggests, might be to examine how different workers use knowledge; to see which technologies best gather and disseminate the information that knowledge workers need; and to find the workspace that is best suited to people who are highly mobile and need to concentrate a lot.

The sort of technologies he has in mind are the sophisticated online directories that companies have developed to help employees identify expertise and knowledge held by others within the organisation. Examples include Hewlett-Packard's Connex, Motorola's Compass and IBM's Blue Pages Plus. To some extent the effectiveness of these systems can be measured in a Taylor-like way. How many human connections did they enable to take place during a certain period? How valuable do users find them, on a scale of one to ten?

Companies now are investing huge sums in such systems of "knowledge management", which include their intranets and their internal databases. One company describes its intranet as "a vibrating current of what is going on in the business". The challenge is to ensure that employees can plug into this vibrating current as and when they need it.

There are three broad approaches to knowledge management. One is to create a system where all information goes to everybody, which is hugely inefficient; the second tells people what others think they need to know, which may not match their real needs; and the third enables them to find for themselves whatever they want to know. Companies like to say that they aim for the third approach, but they do not always find it easy.

In the end, though, do knowledge workers not always contribute something ▸▸

that is unmeasurable? Yves Morieux, a consultant in the Paris office of the Boston Consulting Group, certainly thinks so. "The most valuable human mechanisms are not measurable," he maintains. As an example, he points to the fact that Olympic relay races are often won by teams whose members do not have the fastest aggregate times. When Mr Morieux talked to members of a French Olympic medal-winning women's relay team, he was told that at some point you have to decide whether to run your guts out and literally not be able to see straight when you pass the baton; or whether to hold something back to make a better baton-change and enable your team-mate to run a faster time. The value of this sort of decision-making —each individual's contribution to the team—is, he says, beyond measure.

Mr Morieux concludes that companies should concentrate on designing the processes that knowledge workers carry out, rather than measuring their performance. The key to the success of Ryanair and other low-cost airlines, he says, lies in the way they think about combining processes. Ryanair's cabin crews also do the cleaning inside the aircraft, so if they make a bad job of it they have to face complaints from passengers. In more traditional airlines the cleaners never see the passengers.

Business, says Mr Morieux, is about the sort of trade-offs that Ryanair stewards are making all the time—between punctuality and cleanliness, between service and speed. In the organisation of the future, he says, the main tasks of managers will be to judge what are the most important trade-offs for their particular business; then to decide who is best placed to make decisions about those trade-offs; and finally to delegate responsibilities accordingly.

So what is required to build and maintain the kind of "new organisation" in which knowledge workers will thrive? The three words that most commonly crop up in answers to this question are leadership, talent and culture. To look at the shelves of business books on leadership, the visitor from Mars might imagine this was something that the business community on Earth had only just discovered. But current interest in the subject has been greatly stimulated by the spread of the "disaggregated" organisation: with more responsibility handed down to the workforce at large, many more people than before are having to exercise leadership. The market for books on the subject has grown by leaps and bounds.

The leaders who feature as role models for businessmen these days have changed ▸▸

Inculcating culture

The Toyota way

IN AN organisation whose employees are self-motivating and largely self-directing, the compass that steers them in the way the organisation wants them to go is its culture. Toyota has 580 different companies around the world, 51 factories outside Japan, and sells cars in more than 170 countries. What holds these operations together and makes them part of a single entity, says Takis Athanasopoulos, the head of its European operations, is the company's strong corporate culture.

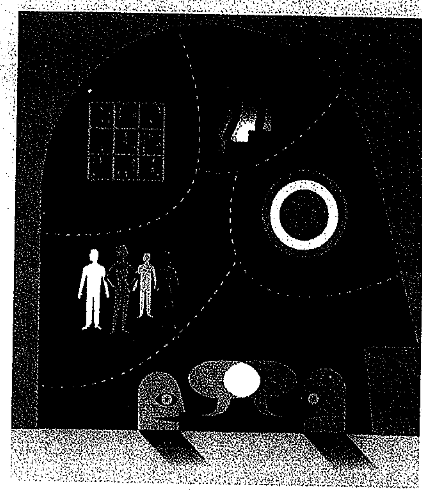
"The Toyota Way", which embodies the Japanese carmaker's culture, has five distinct elements:

• *Kaizen*, the well-known Japanese process of continuous improvement. *Kaizen* is more a frame of mind than a business process. Toyota employees come to work each day determined to become a little better at whatever it is they are doing than they were the day before.

• *Genchi genbutsu* (GG), which roughly translated means "go to the source". Find the facts and do not rely on hearsay, because it is easier to build consensus around arguments that are well supported. And also go to the source of the problem. Mr Athanasopoulos says that western companies spend too little time defining what business problem they are facing, and too much time coming up with solutions. GG puts the emphasis the other way round.

• Challenge. This is reminiscent of the Chinese proverb, "May you live in interesting times." Toyota employees are encouraged to see problems not as something undesirable, but to view them positively as a way to help them to improve their performance further.

• Teamwork. This means putting the company's interests before those of the individual, and sharing knowledge with others in the team. Much of this does not come naturally, and Toyota devotes a lot of time and money to on-the-job training.



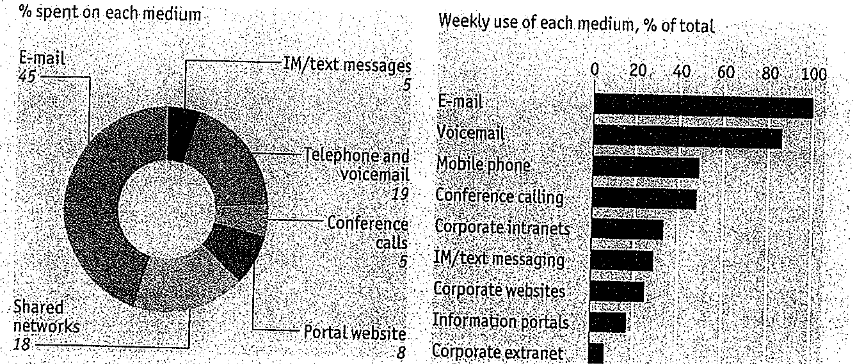
• Respect for other people, not just as people but also for their skills and the special knowledge that derives from their particular position in the company. Toyota believes that if two people always agree, one of them is superfluous. Different opinions must be expressed, but in a respectful way.

Once these values are inculcated into a worker, they guide decision-making throughout the day. There is no need to refer matters up the silo to ask what to do. Everyone knows what solution should be adopted, so decision-making is dramatically speeded up.

Japanese colleagues who know the culture well, says Mr Athanasopoulos, reach a point of "emotional fortitude" where their behaviour is entirely consistent with the organisation's culture and beliefs. In the West, where individual interests tend to be put before those of any group, it is more difficult for employees to reach this state. It may be something that will give the "new organisation" in Japan an intrinsic advantage over its incarnations elsewhere.

How knowledge workers communicate

Information-processing time*



Source: "*Thinking for a Living*", by Thomas H. Davenport

*US 2003 survey of 439 respondents with access to all media listed

as well. Few people are looking for lessons in modern leadership from Alfred Sloan, the legendary architect of the once-great General Motors, or Thomas Watson, creator of the first great incarnation of IBM, or indeed Bill Gates, founder of Microsoft. Instead, the most popular figures from history are probably Alexander the Great and Ernest Shackleton.

Alexander is a perennial favourite, given a boost in this era of globalisation by his claim to be the first leader with a truly global vision, the first great bridge between East and West (never mind that one contemporary described him as "murderous and melancholy mad", and that he died of alcohol poisoning at 32).

Shackleton failed to achieve the goals of his polar expeditions, but saved all his men by beating a retreat that required great courage. His story strikes a chord with members of the new organisation, where looking after your team is valued more highly than carrying on regardless in search of some big strategic goal.

Which way up?

The flattening of the organisation has had at least one unexpected consequence. With fewer rungs on the ladder, there is now less opportunity to make visible progress to the top: promotion within the company has become rarer. Some people worry that this will leave a dearth of people with enough experience needed to run an organisation. To counter this, GE and Procter & Gamble have developed a cadre of three vice-chairmen with broad areas of responsibility who are the heirs apparent—CEOs in training.

Young managers are frustrated by having fewer opportunities for promotion; in a recent poll of British managers, 38% said that their company's flatter structure was a barrier to their career. The temptation is to move to another company that can offer an intermediate rung on the ladder.

One of the main challenges for leaders of the new organisation is to hold on to the knowledge workers who are essential to its operation. Some companies have been re-examining the way they reward knowledge workers. Booz Allen Hamilton's Gary Neilson says that for talented people in western companies today, financial incentives matter less than non-financial ones—things such as esteem, a challenging and varied job, and the chance to work in teams. Knowledge workers get a lot more out of corporate life than a pay cheque at the end of the month. For many it is an important channel for meeting new people at a time when traditional organisations which served that purpose—such as churches and clubs—are in decline.

According to Jay Lorsch, at Harvard Business School, affluent societies often assume, wrongly, that workers are motivated only by money. Bostonians were astonished late last year when Theo Epstein, manager of the hugely successful Boston Red Sox baseball team, walked away from a multi-million dollar contract at the age of 31, saying that he was looking for a different kind of fulfilment.

Henry Ford is credited with a flash of business genius when he doubled the pay rate of manual workers on his assembly lines in 1914. By putting the cars they were making within their financial reach, the story goes, he sharply increased the market for his Model Ts. But there may have been a more prosaic reason. Work on the assembly line was so boring that Ford had to provide his employees with large financial incentives to stop them moving back to more traditional manufacturers, where they were responsible for a much larger part of each vehicle.

Knowledge workers may not be tempted by such bribes. Money remains important, but it is being used to achieve different objectives. At IBM, the emphasis in the annual bonus schemes has shifted away from the performance of the employee's individual unit and towards that of the company as a whole. Linda Sanford, a senior vice-president at IBM, says it has not made a huge difference to the amounts paid out, but it has sent a signal that the company wants people to work together.

At Toyota, most of a manager's bonus is linked to the performance of the business in the whole of his region, and only a small amount to his individual performance. BP strips out changes in the price of oil and foreign exchange from its profit-sharing scheme because they are outside its employees' control.

Some companies have discovered that one way they can reduce the loss of talent is by keeping their doors open. Traditionally, once employees had left they were not welcomed back. A senior executive leaving a blue-chip investment bank, say, would never return. Today the banks' attitudes are different. McKinsey too has begun to re-recruit former employees. David Thomas, a professor of business administration at Harvard Business School, explains that companies need to accept that they may not be able to excite all the talented people on their payroll all the time. So let them go, he says, and try to entice them back later.

Keeping the doors open will also help women enter the higher echelons of management, where they have been persistently under-represented. They are far more likely than men to leave an employer in mid-career, if only to have children. Yet few end up returning to their former employers, and those that do rarely return on the same terms as they left. One survey in America last year found that women re-entering the workforce after an absence of three years or more suffered an average reduction in salary of 37%.

But re-entry problems are not encountered only by women. On the beaches of California, a lot of male business-school graduates walk around with surfboards under their arms. They have worked for a time, earned some money and decided to do something different. One day they may want to return to work. Companies that are not prepared to welcome such people back will lose out. ■

Teaming with bright ideas

Better ways of working together

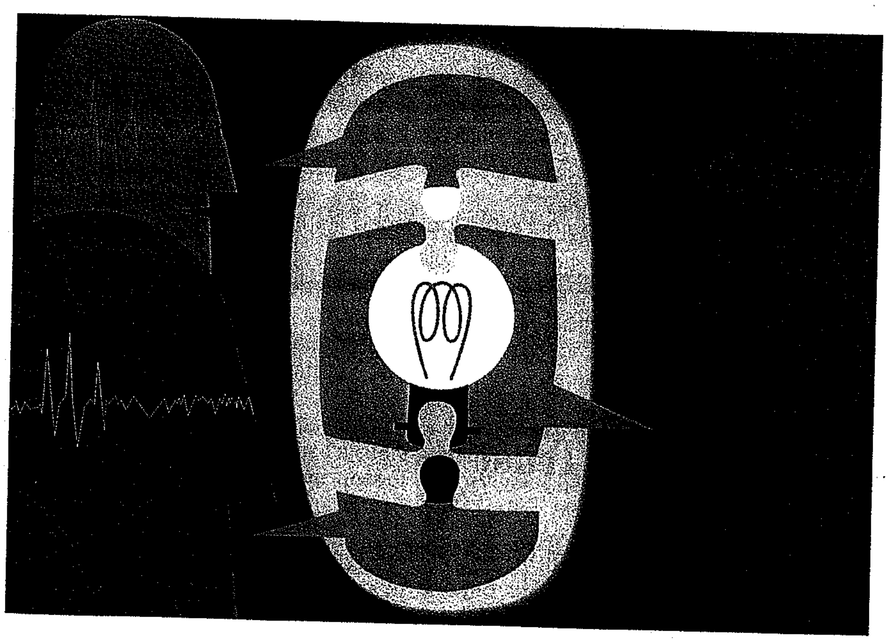
COMPANIES are eager these days to emphasise that they are organised around teams. A recent series of advertisements for Microsoft featured teams of employees from the giant software company getting excited about the various projects on which they were working together.

Headhunters are increasingly being asked to assemble teams of top executives, not merely to find a single high-performing CEO. And the bosses themselves are expected to be good at putting together teams. David Nadler, the founder and head of Mercer Delta, has recently published a book called "Building Better Boards" arguing that it is time for the corporate board to reinvent itself "and become a high-performing team offering real value to the company".

The speed and efficiency with which effective teams can be brought together to resolve problems is crucial to success in the modern organisation. In a recent *Harvard Business Review*, Philip Evans and Bob Wolf, who work for the Boston Consulting Group, explained how teamwork within Linux, the open-source software "community", managed to build a barrage to protect the system against a virus that had breached a vulnerable spot: "Despite the need for the highest security, a group of some 20 people, scarcely any of whom had ever met, employed by a dozen different companies, living in as many time zones and straying far from their job descriptions, accomplished in about 29 hours what might have taken colleagues in adjacent cubicles weeks or months."

The authors argue that Linux was more successful at resolving the problem than its more conventionally structured rival Microsoft would have been. The article holds up the Linux crowd as the "virtuoso practitioners of new work principles that produce energised teams and lower costs."

But it is not just geeks in the software industry who have learnt to work in this way. Messrs Evans and Wolf say that the management methods of Toyota, the company that invented "lean manufacturing" (the remorseless elimination of waste) resemble, "in a number of their fundamentals, the workings of the Linux community". One stroke of genius of the so-called Toyota Production System was to apply the principles of lean manufacturing to inventory. What could be more wasteful than having shelves piled high with supplies that were not going to be used for weeks or months?



This gave rise to the famous "just-in-time" method of stock control. Toyota realised that the best way to make this system work was to allow the workers on the factory floor to control the flow of supplies, because they had the information that would keep stocks at their lowest. This forced Toyota to decentralise decision-making and, unlike most Japanese companies, empower its shop-floor workers.

In recent years Japanese companies have swung from being undisputed stars of management practice to being mere organisational mortals. The controls and formal hierarchies that made them such formidable production machines in the 1980s are no longer seen as a big competitive advantage; indeed rather the opposite.

However, Messrs Evans and Wolf argue that Toyota has now moved beyond lean. "In the Linux and Toyota communities," they say, "leading is not treated as a discipline distinct from doing. Rather, the authority of leaders derives from their proficiency as practitioners."

In its latest annual report, Toyota describes a significant new feature of its management system: "Senior managing directors do not focus exclusively on management. They also serve as the highest authorities in the specific operational functions." In other words, specialists have become leaders. This system, says the company, "helps closely co-ordinate decision-making with actual operations". It is no coincidence that Toyota's new president was previously the head of its supply-chain management.

Clusters, mules and brokers

To see how they might make teams work better, companies have begun to look at the informal networks that employees create outside their organisation's formal structure. Mapping of such networks shows that most people stick together in clusters of eight to ten like-minded souls, a group with whom they undertake the vast majority of their communications and with whom they feel "safe".

There is, however, a certain sort of individual who moves across different clusters. He or she is likely to take part in lots of activities and associate with people ▸▸

from other departments. He is not necessarily the most charismatic person in a group, but by acting as a "knowledge mule"—someone who carries ideas from one corporate silo to another and thereby sparks off new ideas—he is a key figure.

Brian Uzzi, a sociologist at Kellogg business school, part of Northwestern University just outside Chicago, has looked at ways in which companies can make use of such mules, whom he calls "brokers". Some law firms, for example, try to identify them and reward them differently, because their value lies in bringing ideas together within the firm, not in bagging new clients, which in the legal profession is the more usual yardstick for rewards. Mr Uzzi thinks that companies should try to identify brokers and make it their business to recruit them.

The more that workers interact with each other, the more likely they are to solve the problems of complexity that are a feature of modern organisations. "The value of interactions is rising", says the Boston Consulting Group's Mr Morieux, "because their generative function [meaning their ability to generate new ideas] has become the solution to increasingly challenging organisational problems."

MBWA—Management by Walking Around, a style championed by Bill Hewlett and David Packard in the 1960s and 1970s as they built up their company, had the boss leaving the rarefied atmosphere of his executive suite and wandering around to see what the troops were up to. The modern-day version of this is MBTA—Management by Talking Around.

It also matters how you talk. Face-to-face or over the phone? By voicemail or by texting? The rapid development of telecommunications has opened up all sorts of new options, yet little research has been done into the relative effectiveness of new ways of communicating.

It seems to make a difference whether a communication is synchronous (eg, the telephone, where you get an immediate answer to your question) or asynchronous (eg, e-mail, where you send a message and then wait for the answer). Research indicates that a complicated sales pitch is less likely to succeed using asynchronous methods. If you want to escape from a predatory salesman, ask him to make his pitch in an e-mail.

The Boston Consulting Group's Mr Evans says that face-to-face contact is valuable for establishing trust between people, but once that has been done, it does not need to be repeated very often. People will happily deal at a distance with parties they have come to trust. Mr Evans also points to the growing sophistication of virtual environments (as seen in electronic games such as "Second Life", in which players interact online with as many as 70,000 other players around the world). He believes these will cause people to rethink what they can do together without actually getting together physically.

The minutiae of meetings

For the moment, despite the growth of virtual alternatives, the most efficient way to get decisions made is often to sit people round a table for a discussion. Indeed, the virtual alternatives to such meetings are becoming increasingly good at recreating that environment. The latest videoconferencing equipment gives participants the impression that they are facing a bunch of people sitting round a table.

Businessmen still go to great trouble and expense to get together with other businessmen and talk. Meetings may stick more closely to the agenda than they used to, and waste a little less time, but the formal business meeting is far from extinct.

Big and no longer blue

A totally new, improved IBM

IBM has been an early adopter of many of the features of the new organisation. As Linda Sanford, a senior vice-president and one of the highest-ranking women in the company, puts it, "you have to have an organisation that senses change and by itself identifies a working team that can go after the opportunities." To help create such an environment, the chairman and chief executive, Sam Palmisano, in mid-2003 decided that the company needed to rethink and restate its values. When employees are released from central control, the strongest glue holding them together is the set of values embraced by the organisation they work for.

Following a 72-hour online real-time chat session with its employees, IBM came up with its three values for the 21st century: "dedication to every client's success"; "innovation that matters, for our company and for the world"; and "trust and personal responsibility in all relationships". It may seem banal, but there is common ground here with many other modern firms. IBM has also opened an online suggestions box called "Think Place" where ideas are logged for all to see and to improve upon. Of the first 4,500 to appear, 300 have already been adopted.

The company has devoted considerable resources to redesigning its intranet, its internal online data and its communications system. Like others, it is trying to change the system from being a mere means of distributing messages to becoming a lure that brings together seekers of knowledge and collaborators. Identifying employees with particular expertise within the company has become easier.

"We have to let go of the old command-and-control structure if we're going to grow," says Ms Sanford. In a book published last month, "Let Go to Grow", she argues that instead "businesses must adopt a culture of collaboration—both within their four walls and outside them." The good news is that the technology to do that is now available.

An internal account of how the company resolved a technical problem in the wake of Hurricane Katrina shows how such collaboration can work: "Using our Blue Pages Plus expertise locator on the corporate intranet, we found the right people within the space of an hour or two, and had a wiki [a web page that can be edited by anyone with access] up and running. Using the wiki as a virtual meeting room, a team of IBMers from the US, Germany and the UK were able to offer a solution to the problem in the space of just a few days." It all sounds very 21st century. But it will work only if the right incentives are in place to persuade people to work in unconventional ways.

Indeed, as decision-making has been spread more widely within business organisations, and as more people have become involved in it, the number of business meetings has probably increased.

Some companies are attempting to get more value out of this plethora of meetings. Victoria Medvec at Kellogg business school says that when people sit down together, there is a tendency to seek confirmation of what everyone already knows. To avoid this, she suggests, participants should do two things before they even start opening their mouths. They should write down what they think about particular items on the agenda, and they should rate the strength of their views on a scale of, say, one to ten. That way, she says, participants will remember what they thought before their views were influenced by others.

The emerging "new organisation" pays more attention than did its predecessors to the environment in which people work. Physical space matters, if only to the quality of communication. Some companies are reinventing the "skunkworks", groups of people who work on a project outside the company's normal rules (and outside its normal places of work) to help them come up with extraordinary results. IBM famously used this method in 1980 to invent its personal computer.

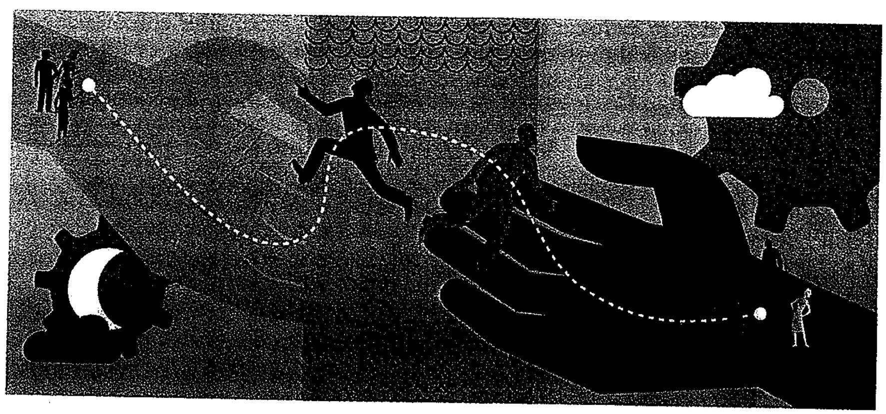
The skunkworks concept fell into disrepute when it was seen as just another cost centre, and one with attitude at that. Now it is being revived, but in a different guise. Much of Motorola's Razr mobile phone, currently a big market hit, was developed in a new laboratory that the company has set up in downtown Chicago, 50 miles (80km) from its main R&D facility in suburban Illinois. The building and the design of the workspace are very different from Motorola's main offices, with lots of bright colours and no dividing walls.

In this type of skunkworks, geniuses are not just left to breathe pure intellectual air, as they often were in previous incarnations; they are also constantly brought into contact with designers, marketing people, production managers and accountants. The idea is not that they emerge at the end of the day with something that makes their competitors say "wow". It is that they come out with something that makes their competitors' customers say "wow". ■

Partners in wealth

The ins and outs of collaboration

THE new organisation contains a mass of contradictions. Charles Knight, Emerson's long-time boss, boasts that his company combines consistency with fundamental change. Parts of Motorola are centralised and parts are not, and those parts change over time. The company's skunkworks, for example, are decentralised to encourage innovation, but its accountants are centralised. "We don't want highly innovative accountants," says Motorola's Mr Canavan.



In a paper entitled "The Strategic Enterprise: Rethinking the Design of Complex Organisations", Mercer Delta describes its vision of the organisational architecture of the future, made up of a number of strategically aligned businesses "linked closely where there are opportunities to create value by leveraging shared capabilities, but only loosely where the greater value lies in differentiated focus". In other words, close and loose relationships will coexist within the same organisation.

In the traditional organisational structure, units were either within the organisation and, as Mercer Delta's David Nadler puts it, "densely connected", or they were outside the organisation and not connected at all. Transactions with external suppliers were at arm's length. By contrast, companies today cohabit with a vast number of joint-ventures and strategic alliances, some more and some less connected. The line between what is inside and what outside the corporation, once so clear, has become blurred.

One of the most contentious of these new relationships is outsourcing—the handing over to others of what were once considered to be core functions of the company. First to be transferred to more efficient providers were companies' manufacturing operations. Firms such as Nike have stretched this idea to such an extent that some of them now make nothing: all Nike's shoes, for instance, are manufactured by subcontractors. Nike employs few people directly. Such companies have become the orchestrators of a brand. Their baton has only limited control over the musicians who play for them, but that does not prevent them from producing great music (or shoes).

Even such a quintessential manufacturer as Procter & Gamble has joined this bandwagon. "Our core capability is to develop and commercialise," its chief executive, A.G. Lafley, has said. "We concluded in a lot of areas that manufacturing isn't [a core capability]. Therefore I let the businesses go do more outsourcing."

The enthusiasm for outsourcing has recently spread to service jobs such as accounts and IT. One of the fastest-growing areas now is human resources (HR). Kennedy Information, a firm of analysts, estimates that the global HR outsourcing market will grow by 25% a year for the next few years. In November 2005, DuPont, a multi- ▸▸

national chemicals company, outsourced its HR services, such as workforce planning and deployment, labour relations and performance management, to Convergys Corporation, a firm based in Cincinnati. The 13-year contract covers 60,000 employees and 100,000 pensioners in 70 countries and is worth $1.1 billion.

But outsourcing is a fluid business. Work that has been handed over to others is sometimes "insourced" back, and not necessarily because it was being done badly outside. Some banks, for example, are bringing the processing of payments back in-house because they have realised that the data they have been handing over to others can become a platform for new business. Software programs that mine data in novel ways can throw up ideas for new products and markets. Over the next few years companies may well come to reassess the value of their HR operations and decide that workforce planning and performance management have become sources of competitive advantage over which they wish to retain control.

The relationships within the new organisation, with their varying degrees of connectedness, can be tricky. Along with greater dependency among businesses, they create new areas of uncertainty. How does a bank protect itself from the risk that employees of a company to which it outsources might steal its customers' PIN numbers? And what happens if the partner in a joint-venture goes bankrupt?

Howard Kunreuther, a business professor at the Wharton School in Philadelphia, argues that this interdependency "is probably the most important issue to start thinking about with regard to risk". Ravi Aron, another Wharton professor, says that companies need "an extended organisation form", with one shape for the outsourced "market" operations, and another for the in-house "hierarchy". The focal point of this extended organisation is a "programme office" where the company and its outsourcers collaborate on matters of mutual interest, such as quality control and performance. According to Jon Watts, a consultant with Booz Allen Hamilton, "it's got to the point where the outsourcing provider and the client company may form alliances and take financial stakes in one another to make sure their interests are aligned."

Up in the air

A good example of how corporate relationships have changed in recent years is Boeing. The process for developing and manufacturing the aircraft-maker's current 787 model has been totally different from the one used for earlier models. Before the 787, Boeing did all the engineering design work itself. The main reason to change, says Mike Bair, head of the 787 development team, was that the company realised it had to trawl the world and find the best suppliers in order to compete with its main rival in the market for commercial aircraft, the increasingly successful Airbus.

Airbus, a joint European venture involving French, German, British and Spanish partners, started from scratch. Almost by accident it stumbled on an organisational architecture that, along with generous subsidies, helped it overtake the giant of the business in less than two decades.

These days, Boeing is organising itself more like Airbus. It scoured the globe for new partners and found some in Europe, some in Japan and some not far from its home base in the United States. Whereas with the 777 aircraft the company worked with 500-700 suppliers, for the 787 it has chosen just under 100 "partners".

The difference is not just in the numbers, but in the relationship. Suppliers provide what they are asked for; partners share responsibility for a project. For over six months in 2005, teams of people from the various 787 partners met at Boeing's base in Everett, north of Seattle, to work together on the configuration of the plane—something that until then Boeing had always done by itself. Now the partners are back at their own bases, responsible for all aspects of their piece of the puzzle. The partners are building their own production facilities for their bits of the aircraft. The first flight is scheduled for 2007, and the 787 is due to come into service in 2008. As Mr Bair says, "it puts a high premium on the choice of partners in the first place."

It also puts a high premium on the management of that network of partners. Boeing holds a partners' "council meeting" every six weeks, and has set up a network to facilitate global collaboration which makes it possible for designers all over the world to work on the same up-to-the-minute database.

The company is also putting great faith in videoconferencing and has set up high-bandwidth facilities that are in constant use. People come into their offices in the middle of the night to have virtual meetings with colleagues in different time zones. Technically, the 787 will be an American plane; but in reality it will be a global one. ■

The X and Y factors

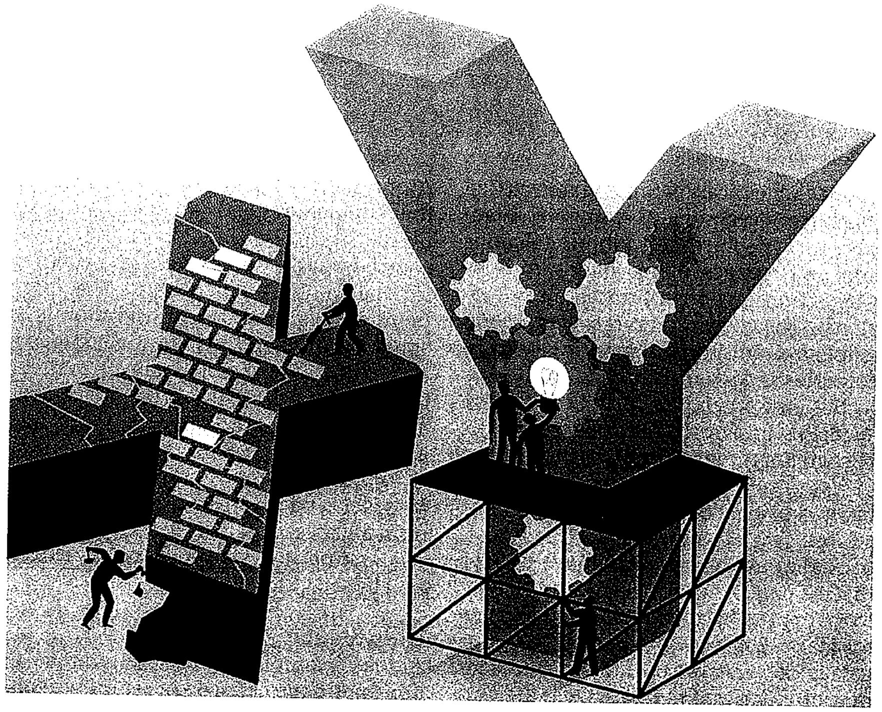
What goes around, comes around

ALMOST since the day it began, the dominant academic discipline behind the "science" of management has been engineering. When Oxford University first allowed management to be taught as an undergraduate subject (as recently as the late 1970s), it was introduced as a combined "engineering and management" degree.

Some of the most famous management gurus, notably Michael Porter, Michael Hammer and Tom Peters, trained as engineers first. Many of the most influential business leaders were also engineers, including Alfred Sloan, who built General Motors, and Jack Welch of GE. Their training taught them to divide things up into small pieces, make each piece better and then put them all together again. It was a bit like Legoland.

Management science's founding father was yet another engineer: Frederick Winslow Taylor, who wandered round factories with a stopwatch and a clipboard to measure workers' productivity. It was the job of the managers, he told them, to improve that productivity by refining the processes the workers had to perform. In Taylor's world, improvement was defined by time and motion.

Just occasionally, different academic disciplines would raise their heads and suggest that they, too, might have something to add to the thinking on organisational improvement. The economist Ronald Coase, for instance, argued in the 1930s that firms existed to reduce the transaction



costs involved in doing things—in particular, the cost of finding business partners, making contracts with them and monitoring the contracts thereafter.

Faster, cheaper telecommunications and the emergence of the internet have dramatically reduced such transaction costs. The advantages of a firm over a marketplace full of independent contractors have been eroded. In consequence, firms have outsourced many of their operations into marketplaces, or are trying to foster internal, in-house marketplaces.

Psychology too has had its moments. Elton Mayo's experiments at the Western Electric Company's Hawthorne plant near Chicago in the late 1920s became a landmark, demonstrating that there was an aspect to productivity that transcended time and motion. When the lights in the factory being monitored were made brighter, productivity improved, as you might expect. But when the lights were made dimmer, productivity unexpectedly improved further. As it turned out, it was not the dimming or brightening of the lights that had an effect, but the attention that the workers were getting.

Beyond engineering

In the 1990s engineering enjoyed a renaissance, in the guise of Business Process Reengineering (BPR), the dominant management idea of that decade. BPR involved reorganising the company around processes such as purchasing, marketing and distribution, which cut across the traditional corporate silos based on products and geography. This involved using different building blocks, but it still treated the company as a series of pieces to be taken apart, improved and put together again like Lego.

The "new organisation" breaks free of this engineering heritage. In "Results", a recent book by two Booz Allen Hamilton consultants, Gary Neilson and Bruce Pasternak, the authors talk about "the DNA of living organisations". Corporate DNA, they suggest, consists of "four basic building blocks: decision rights; information; motivators; and structure". These combine in different ways to make more than the sum of their parts, expressing distinct identities or personalities. McKinsey's Lowell Bryan also talks about "the personality of the firm".

This switch, from Lego to DNA, echoes one of the best-known classifications of corporate culture ever made. In "The Human Side of Enterprise", originally published in 1960, Douglas McGregor, a Harvard academic, divided management styles into Theory X and Theory Y. Theory X was the classic command-and-control type of management, the authoritarian style which (McGregor wrote) "reflects an underlying belief that management must counteract an inherent human tendency to avoid work." This is the world that Frederick Taylor observed, and the world that organisation man was designed for.

Theory Y is the antithesis of X. It "assumes that people will exercise self-direction and self-control in the achievement of organisational objectives to the degree that they are committed to those objectives". Theory X is bent on devising the right sticks with which to prod work-shy labour; Theory Y looks for the carrots that will induce them to stay.

McGregor's dichotomy has been hugely influential in management thinking ever since his death in 1964. The new organisation lies firmly at the Theory Y end of his spectrum. It challenges employees, in his words, "to innovate, to discover new ways of organising and directing human effort, even though we recognise that the perfect organisation, like the perfect vacuum, is practically out of reach."

McGregor himself came to believe that neither management style in its pure form could work successfully. Firms would find a balance between the two that would shift over time to fit new circumstances. But the new organisation is beginning to prove him wrong. Companies are coming to realise that knowledge workers, who have been identified as the creators of future wealth, thrive only under Theory Y. Theory X is becoming extinct—just like organisation man himself. ■

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