

The Practice of Construction Management

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Preface

This book is for managers and students who want to learn more about the human side of construction management. The aim is to provide a readable account of current ideas and practices in management.

Over the years, there has been an explosion of management information and this book pulls together the main themes and trends, which the reader can check against his own experience. The book incorporates what has been learned from management in action and from research.

Quantitative techniques used in the planning and control of construction are not described. They are adequately covered elsewhere. Instead, this text is devoted to the many human skills and techniques so essential to the effective construction manager.

Books about management cannot solve the manager's problems but they can guide his thinking, identifying issues more clearly and suggesting possibilities. The engineer does not re-invent the wheel every time he tackles a problem. He builds on information and skills already available and adds his own contribution. The construction manager must do the same.

Throughout the text, both the manager and subordinates are referred to as 'he'. This has been done to make the text more readable.

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1 The development of management thinking

Management is both a fascinating and frustrating subject. It abounds with exciting and challenging ideas, but even the most promising ideas don't always work. Throughout the twentieth century, managers have searched for a set of guidelines for running a business. The result has been a jungle of diverse and often conflicting ideas about what managers are and what they do – or ought to be doing.

People have looked at management in different ways. Some have tried to identify the things managers do, whilst others have looked at how they do them. Some have put forward management principles to apply to all organisations, whilst others are sure there are none.

Despite many attempts to describe management, no widely accepted definition has emerged. Simple definitions include 'running things properly' and 'getting things done through people'. Rosemary Stewart (1979) brings decision-making into her definition of management – 'deciding what should be done and then getting other people to do it'.

To be more precise, we need to say how and why the manager does these things; what tasks or processes are involved. The early management writers, who were mostly practising managers, said that these processes included planning, organising, directing and controlling. This led to definitions like:

Management is the process of steering an organisation towards the achievement of its objectives, by means of technical skills for planning and controlling operations, and social skills for directing and co-ordinating the efforts of employees.

Although harder to take in, this definition highlights the complexity of management. Yet it still tells us little about *how* managers work.

Like the simple definition, it tells us that a manager is someone who plans and gets things done; that the role involves achieving objectives and co-ordinating the work of others. It does not tell a site manager whether to use the same planning techniques as a factory manager, or how to get co-operation from a site team.

Such definitions also give little indication of how management is changing. Management today is harder and less intuitive than in the past. Building and civil engineering firms used to be smaller and simpler. There were fewer specialists and fewer rules. Jobs were more flexible. Managers were closer to the work and communications were better.

Today, many construction firms have grown and their activities are more complex. The ratio of managers to workers has increased. There are more specialists and many rules and procedures. Roles are more tightly defined and there are many external controls.

Managers need more skills and more information to cope with these changes. In large organisations, the days of the individual manager running things have gone. The efficient organisation of big business now demands *team* management.

Some commentators foresee the growth of a strong management movement and say that we are heading for a managerial society, in which managers run everything, whatever the political framework. Others, like Alistair Mant (1979), argue that there is nothing special about management; that the things managers do – setting targets, taking decisions, monitoring progress – are not so different from the things most people do every day of their lives.

EARLY CONTRIBUTIONS TO MANAGEMENT THINKING

The systematic study of management to find out what managers ought to be doing, emerged at the end of the nineteenth century. The industrial system was already well established. People had migrated to the towns to work in the factories and mills. They worked long hours for low pay. They worked hard – or they lost their jobs. The managers were powerful and this made their jobs easier.

Some of the managers wanted to learn more about their work. They tried to analyse their jobs and the events happening around them. They wondered if there could be principles of management that would work anywhere – a science of management. Their experiences seemed to support this, for managers everywhere

THE DEVELOPMENT OF MANAGEMENT THINKING

appeared to be doing similar things – drawing up programmes, marshalling resources, allocating tasks and controlling costs.

They came to believe that it was possible to devise an ideal organisation, using a set of design rules that would apply anywhere. The books they wrote formed the basis of *the classical or scientific* management movement, as it is known today. The design rules were later developed and refined by writers like Lyndall Urwick. These rules or principles included:

- *The principle of specialisation.* Every employee should, as far as possible, perform a single function.
- *The principle of definition.* The duties, authority and responsibility of each job, and its relationship to other jobs, should be clearly defined in writing and made known to other employees.
- *The span of control.* No one should supervise more than five, or at most six, direct subordinates whose work interlocks.

How useful are such guidelines to a manager setting up a civil engineering site, or a resourceful joiner wanting to start his own building firm? The answer is that they offer only general guidance rather than a blueprint for designing an organisation (Stewart, 1979).

The principle of specialisation is heavily qualified by the phrase ‘as far as possible’. How many people in construction perform only ‘a single function’? What is ‘a single function’ anyway?

The principle of definition is sometimes impractical. How many managers in construction have a clearly defined, set task? Most have to adapt to each new project and cope with constantly changing problems as it moves from start to finish.

The principle of the span of control is very specific and has been widely quoted among managers. Many now believe it is too restrictive. Some writers have modified the principle, saying that a manager’s span of control should be limited to ‘a reasonable number’, but this reduces the principle to a statement of the obvious.

Certain factors clearly affect the size of group a construction manager can handle. They include:

- the manager’s character and abilities;
- the attitudes and capabilities of the members of his group;

THE PRACTICE OF CONSTRUCTION MANAGEMENT

- the amount of time the manager spends with the group;
- the type of work the group is doing;
- the proximity of the manager and group members;
- the extent to which the manager is supervising direct or sub-contract personnel.

A general foreman can co-ordinate his site team fairly easily. A contracts manager controlling projects spread over a sixty mile radius will find it more difficult. He will spend a lot of time travelling!

People have used arguments like these to refute many of the early management ideas, although they probably worked well enough in their day. Applied to modern organisations, the management principles can be justifiably challenged because:

- Conditions have changed. Projects are more complicated and legislation is more extensive and demanding. Attitudes to work have changed. Collective bargaining has put constraints on employers. The Welfare State has removed some of the fear of being out of work. These changes have slowly undermined the manager's power and placed new obligations on him. The manager's job today is very different from that of the tough task-master of the early 1900s.
- Evidence now suggests that there is a divergence between what managers do and what management writers say they ought to do. Henry Mintzberg (1973, 1976) found, in his studies, that managers were not very systematic. He dismissed much of the early management thinking as folklore, saying that managers are not the reflective, analytical planners they are made out to be. Instead they spend their time liaising and negotiating with people and coping with an unrelenting stream of problems and pressures.

Most managers today recognise the importance of people in organisations, but the early management thinkers concentrated mainly on the tasks of the business. They thought the main problem in the factories and mills was to design efficient workplaces and control resources tightly. Most of them treated labour as a resource, to be worked as hard as possible.

From the outset of the Industrial Revolution, a few managers

showed concern for the well-being of employees, but experience of large-scale industry was limited. No one fully understood the effect the new workplaces would have on people. But some managers quickly sensed that they could not treat people like machines.

MANAGEMENT AND THE SOCIAL SCIENCES

During the early decades of the twentieth century, social scientists began to study people in industrial settings. At first, their interest centred mainly on how work practices and working conditions affect people. Later, some of their attention switched to how workers affect organisations. Elton Mayo is regarded as the founder of this *human relations* movement, which brought into prominence the idea that employees must be understood as human beings if organisations are to be run efficiently. Mayo's far-reaching research at the Western Electric Company near Chicago (Mayo, 1933) – the Hawthorne studies – generated momentum for other work, including extensive research on group behaviour at the University of Michigan.

In Britain, one of the most determined and practical studies of the relationship between organisational efficiency and employee well-being was initiated at the Glacier Metal Company in London. It involved many years of close collaboration between managers and social scientists. The Glacier team took the view that the manager not only has a technical role, but a social one of creating an organisation with which workers can identify and in which they can participate and exercise discretion (Jaques, 1951, 1956; W. Brown, 1960).

Other studies have looked at specific topics, such as:

- communication
- worker participation
- leadership
- stress
- labour turnover
- performance
- motivation.

Such work is still going on, supported, in the UK, by bodies like the Medical Research Council and the Social Science Research Council.

The research has yielded many interesting results. For instance, an early discovery was that work groups exercise considerable influence over their members' behaviour and, in particular, over how much work they do. It was found that workers consider pay less important than had been thought. Many of them ranked factors like steady jobs, good working conditions and opportunity for promotion, higher than pay (Brown, 1954). Other findings suggest, for example, that:

- satisfaction and dissatisfaction depend not so much on physical conditions, but on how people feel about their standing in the firm and what rewards they believe they deserve;
- complaints are not necessarily objective statements of fact, but symptoms of a more deep-seated dissatisfaction;
- giving a person the chance to talk and air grievances often has a beneficial effect on morale and performance;
- employees' demands are often influenced by experiences outside, as well as in, the workplace.

Whilst these conclusions are fairly simple and clear, many research results are complex, fragmented and difficult to apply. Some construction managers are openly sceptical about the social sciences, arguing that many studies pursue trivial and obvious relationships, whilst findings are often published in an incomprehensible form. Perhaps what is obvious to the manager was not quite so obvious until it was pointed out by the social scientist, but it is true that the latter tend to publish their findings for an audience of social scientists rather than managers (Lupton, 1971). Psychology, for instance, is every bit as concerned with the behaviour of building workers on site as it is with the study of mental disorders. Yet the applications of psychology on site have not been made clear and busy site managers are left to make their own conceptual leap from theory to application (Marilyn Fryer, 1983).

Nevertheless, psychologists and sociologists have made a substantial impact on management ideas and business practices. There has been a noticeable shift in attitudes over the years (see fig. 1.1). Managers are more aware of the construction worker's needs and aspirations and take a more humane approach.

Legislation has also compelled managers to give employees a

better deal, and collective bargaining between the unions and employers has improved the terms and conditions of employment of most construction workers. On larger sites, operatives can usually exercise some influence over the organisation through their shop stewards, safety representatives and site safety committees.

By the 1960s, so much was being written about the relationship between people and organisations, that managers came under pressure to modify their leadership styles, get subordinates involved in making decisions and give them more autonomy in their jobs. The work of American writers like Argyris, Herzberg and Likert, and British writers, such as Emery, Trist and Rice at the Tavistock Institute, were brought to the notice of managers through books and business courses. For a time, it seemed that so much attention was being lavished on the worker by management writers and educators, that managers might forget that their organisations still had work to do and profits to make.

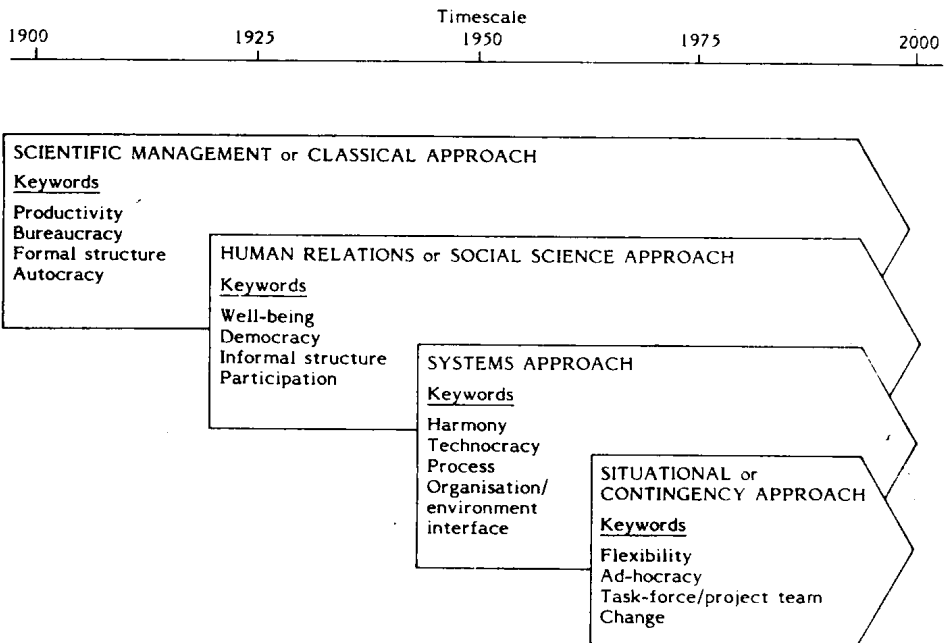


Fig. 1.1 The development of management thinking.

Eventually there was a call for a more balanced approach to management, which would recognise the importance of both people and tasks. Indeed, the Tavistock Institute researchers were among

the first to express this view. Two new trends in management thinking started to emerge and gain ground in the 1960s and 1970s, namely that:

- people and tasks must be considered as related parts of an organisational *system*;
- managers must be more flexible and tailor their approach to the needs of the *situation*.

SYSTEMS MANAGEMENT

Since the sixties, people have tried to apply systems thinking to organisations, to see if it could help make them more manageable. The essence of *systems theory* is that the structure and behaviour of all systems, whether living organisms, machines or businesses, have certain characteristics in common. The manager who is aware of these characteristics is better able to predict the behaviour of the system and understand why it sometimes breaks down.

The construction project is a good example of a system that can be studied over its full lifespan. The project can be viewed as a temporary system, set up for a specific purpose, with well-defined tasks and a set timescale (Miller and Rice, 1967).

In systems thinking, the emphasis is not so much on the parts of the organisation – site set-up, head office departments, and so on – but on the relationship between them. There is a *technical* sub-system, the network of activities for erecting the structure or building, and a *social* sub-system, the people who contribute their energy and skills to the project. The human and technical problems cannot be divorced from one another. A change in a site bonus scheme will affect the quantity and quality of work. Changing a work method or introducing new equipment may influence operatives' attitudes and morale. The parts of the system are intertwined.

Moreover, the system is open and is influenced by events outside the organisation. The success of a building project depends not only on the project team, but on the activities of competitors, suppliers, government, clients and local communities. Many of the factors affecting the business are not only external, but are beyond the manager's control.

The project is an input/output system. Inputs of information, materials, and mechanical and human energy, are turned into

outputs of finished buildings. The inputs are not wholly within the manager's control and he has to rely on the co-operation of many people, including designers, sub-contractors and suppliers. Outputs include profit, wages and job satisfaction. But there are unintended outputs too. They include noise and waste, toxic fumes and other damage to natural systems. People are injured and exposed to health hazards. They may become dissatisfied and alienated. Profits can turn into losses. Taking a systems approach means looking at the bad consequences of the organisation as well as the good!

Systems thinking emphasises the importance of *feedback*. In every organisation, managers and other employees rely on feedback to regulate their performance. For instance, managers have long acknowledged the importance of feedback in the principle of 'management by exception', where the manager puts most effort into tackling problems and breakdowns and keeps a minimal eye on the trouble-free operations. In systems terms, management by exception means that the manager is acting on negative feedback – feedback which shows something is wrong – and devotes his energies to bringing the system back on course.

Some of the feedback the manager receives is intermittent, giving an incomplete picture, or delayed (feedback 'lag'), which may mean that by the time the feedback reaches the manager, it is too late to take corrective action.

A contractor made a detailed monthly comparison between unit costs and the unit rates in the bills. One month, the comparison showed that the bulk excavation was making a loss of 48p per cubic metre. By the time the information reached the site agent, some 10 000 cubic metres had been excavated, making an irretrievable loss of nearly £5 000.

Managers need quick and reliable feedback on costs, progress and the quality of materials and workmanship. The time taken to obtain each kind of feedback varies. Feedback on progress can be very fast, providing the manager is keeping a close eye on operations, has a good system for recording work done and finds time to compare this data with a well-formulated programme. Cost feedback is probably the slowest and can also be the most inaccurate, since the information on which costings are based is often distorted. Labour returns are often inaccurate, and managers themselves are not always systematic.

A site manager, working for a provincial contractor, disliked filling in labour returns. At the last moment each week, he grudgingly filled in the sheets, relying on memory to record work done earlier in the week. As a result, the descriptions of work carried out by individual operatives were vague and the allocation of hours between operations was approximate. The cost and bonus surveyors found it almost impossible to relate the information to the tender analysis, making cost and bonus calculations difficult and inaccurate.

Systems analysis gives a fresh angle on the manager's job. He has the delicate task of regulating a complex system, maximising the intended goals, whilst keeping unintended effects to a minimum. This requires a high standard of performance from the manager. He has to strike a balance between the technical and human demands on his time. He must keep the system in tune with the world outside and maintain its internal harmony.

Petit (1967) points out that the job of keeping the firm on course and coping with outside pressures is not the same as running the day-to-day operations of the business. Using a systems approach, he defines three distinct kinds of managerial work:

- *Technical*. At the technical level, managers run the production process. In construction, this takes place mainly on site, although some of the office work is directly concerned with production too. Site managers co-ordinate direct and sub-contract labour, plant and materials in order to achieve short-term project goals. They are protected from some of the outside pressures on the business, because the senior managers cope with these.
- *Institutional*. The senior managers are at the institutional or corporate level and Petit defines their task as relating the firm to the world outside. They cope with the risks and uncertainties caused by events and long-term trends over which they have little or no control. The survival or long-range success of the firm is their prime concern. Technical managers have access to a fair amount of reliable information for solving their problems, but senior managers deal with the unforeseen and rely heavily on intuition and judgement.
- *Organisational*. A third group of managers mediates between the other two groups, co-ordinating and integrating their tasks. These organisational managers often have to search for

compromises between the strategic concerns of the top managers and the immediate, operational problems of the technical managers. They have the difficult task of supporting production, making sure that resources are available when needed, whilst ensuring that the day-to-day activities contribute to the long-range goals of the enterprise.

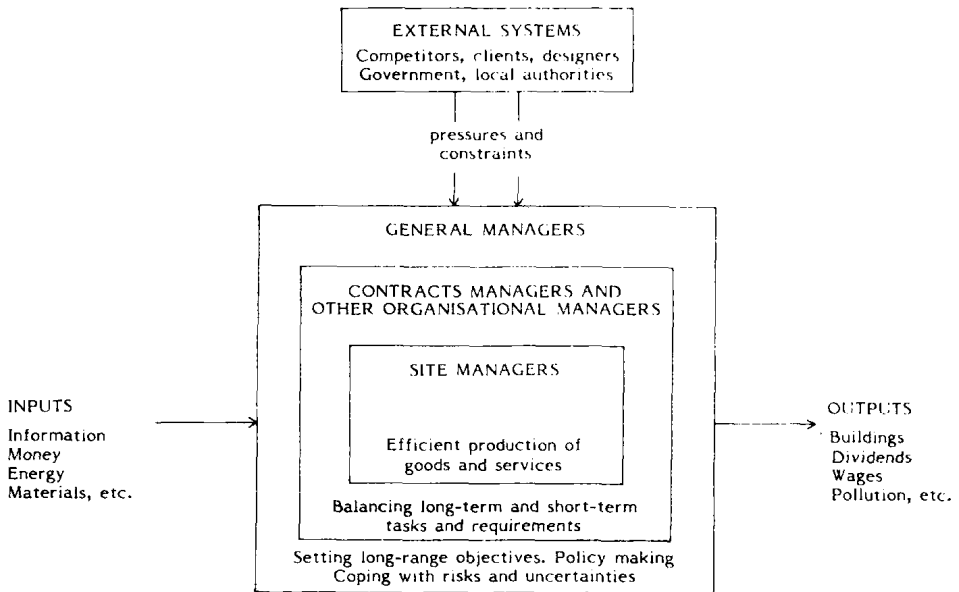


Fig. 1.2 Management of a construction firm: a systems view.

Fig. 1.2 illustrates these levels of management, although they may merge and overlap. In small firms, the same manager may perform all three roles. He will need to understand the demands of each role, know when he is performing each, and apply the appropriate skills. In larger firms, the three levels are likely to be separate. They will be carried out by different people, often relatively independently of one another.

Viewing the construction *site* as a system in its own right, a rather different picture emerges. The site manager is the top manager of this smaller, 'task-force' system. He has the job of welding together an effective team, as well as dealing with outside influences, such as the local labour market, competitors, local authorities and suppliers. The manager may regard the design team and even his own head

office as outside forces which make demands on him that are difficult to meet.

He usually lacks administrative help and has to perform both technical and institutional roles. To cope with the conflicts between these, he has to be an organisational manager as well, using both quantitative methods and judgement to find compromises between the short-range goals of the project and the long-term strategies of the company (see fig. 1.3).

Some site managers enjoy considerable autonomy in running their sites, but others have a narrower role and are expected to leave some of the tasks to more senior managers – contracts managers or directors – and concentrate their efforts on the day-to-day running of the site.

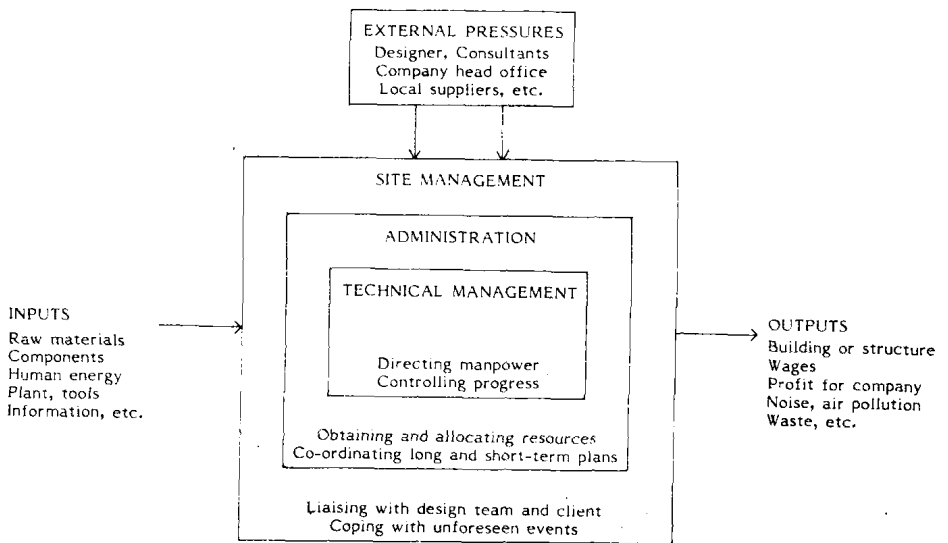


Fig. 1.3 Management of a construction site: a systems view.

Clearly, managers with the same job title may not always have the same responsibilities, and managers at different levels in an organisation perform quite different roles. They are responsible for different aspects of the system's performance.

SITUATIONAL OR CONTINGENCY MANAGEMENT

The long search for similarities between managers' jobs, to build up