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# UNIT 19 TECHNOLOGY AND HRD

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## Objectives

After going through this unit, you should be able to:

- 1 understand objectives and philosophy of HRD;
- 1 identify HRD issues, relating to technological changes taking place in organisational situations; and
- 1 appreciate and develop change mindset to handle emanating HRD issues.

## Structure

- 19.1 Definition of HRD
- 19.2 HRD Philosophy
- 19.3 Aims of HRD
- 19.4 Characteristic Features
- 19.5 HRD Activities
- 19.6 The Nature and Allocation of Work
- 19.7 Technology and Work
- 19.8 Managing the Technological Change in Work Organisation
- 19.9 Relating HRD and Technological Changes
- 19.10 Developing the Change Mindset
- 19.11 Summary
- 19.12 Self Assessment Questions
- 19.13 Further Readings

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## 19.1 DEFINITION OF HRD

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Human resource development is a strategic and coherent approach to the development of an organization's most valued assets – the people working there who individually and collectively contribute to the achievement of its objectives for sustainable competitive advantage.

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## 19.2 HRD PHILOSOPHY

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The main HRD beliefs are as follows:

- 1 ***Employees are valued assets.*** The fundamental belief underpinning HRD is that sustainable competitive advantage is achieved through people. They should therefore be regarded not as variable costs but as valued assets in which to invest, thus adding to their inherent value.
- 1 ***Strategy and culture are important.*** Organizational effectiveness can be increased significantly by paying close attention to the development of integrated business and human resource strategies and by shaping the culture of the organization. A longer-term perspective in managing people and in developing an appropriate corporate culture is seen as important. Every aspect of employee management

must be integrated with business management and reinforce and desired company culture.

- 1 ***Emphasis on commitment rather than on compliance.*** The optimum consistent and coherent policies which promote commitment to the organization and unleash the latent creativity and energies of the people who work there, thus leading to enhanced performance.
- 1 ***Emphasis on the key role of line management.*** HRD is owned by line managers who alone have the responsibility for managing their staff. The role of the HR (personal) function is to enable line managers to fulfill their staff HRD responsibility effectively.

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### 19.3 AIMS OF HRD

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The aims of HRD are derived directly from the philosophical statements given above. These aims can be summarized as follows:

- 1 To enable management to achieve organizational objectives through its workforce.
- 1 To utilize people to their full capacity and potential.
- 1 To foster commitment from individuals to the success of the company through a quality orientation in their performance and that of the whole organization.
- 1 To integrate human resource policies with business plans and reinforce an appropriate culture or, as necessary, reshape an inappropriate culture.
- 1 To develop a coherent set of personnel and employment policies which jointly reinforce the organization's strategies for matching resources to business needs and for improving performance.
- 1 To establish an environment in which the latent creativity and energy of employees will be unleashed.
- 1 To create conditions in which innovation, team working and total quality can flourish.
- 1 To enable the company to make the best use of development in information technology and integrated approaches to manufacturing such as just-in-time, cellular manufacturing and flexible manufacturing systems.
- 1 To encourage willingness to operate flexibility in the interests of the 'adaptive organization' and the pursuit of excellence.
- 1 To maintain a healthy and safe working environment.

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### 19.4 CHARACTERISTIC FEATURES

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The most characteristic features of HRD are that:

- 1 It is the top-management drive activity;
- 1 The performance and delivery of HRD is the prime responsibility of line managers;
- 1 It emphasizes the need for strategic fit – the integration of business and personnel strategies;
- 1 It involves the adaptation of a comprehensive and coherent approach to employment policies and practices;
- 1 Importance is attached to strong cultures and values;
- 1 It places emphasis on the attitudinal and behavioral characteristics of employees;

- 1 Employee relations are individual rather than collective, high trust rather than low trust;
- 1 Organizations are decentralized with flexible roles for staff and more emphasis on teamwork; and
- 1 Reward are differentiated according to performance, competence or skill.

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## 19.5 HRD ACTIVITIES

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The key of HRD activities are described below:

- 1 **HRD strategy:** Formulating strategies which set clear directions for long-term development management and provide the basis for building a coherent approach to personnel management.
- 1 **Organization:** Helping with the restructuring of organizations and the redesign of jobs to fit projected changes in product or systems development, technologies, decentralization and ownership.
- 1 **Culture management:** Using knowledge of the factors which influence commitment to change and devising programmes and methods of introducing change accordingly.
- 1 **Managing commitment:** Introducing communication, participation and performance management systems and implementing educational programmes designed to increase identification with the company's mission and values and to develop behaviour and attitudes which support their achievement.
- 1 **Flexibility:** Developing and implanting flexibility strategies to make the best use of human resources and enable people to learn and apply a wider range of skill.
- 1 **Teamworking:** Enhancing the ability of people to work well together and making the best use to the increased motivation achieved by being part of an autonomous work group.
- 1 **Quality management:** Assisting with the introduction of total quality management approaches through education and training processes, and involving people in quality improvement programmes.
- 1 **Resourcing:** Matching human resources to the changing requirements of the organization.
- 1 **Performance management:** Introducing systems which clarify objectives at all levels in the organization and measures performance against those objectives in order to agree improvement and development plans.
- 1 **Human resource planning and management:** Investing in the training and development of all levels of the workforce and realizing those training programmes to the need of the organization and individuals to improve performance and extend their knowledge base.
- 1 **Reward management:** Using the reward management system to define performance expectations and reward people according to their contribution.
- 1 **Employee relations:** Developing a cooperative climate of employee relation which allows direct communication to employees but, where appropriate, recognizes the role unions play in a pluralist organization.

### The Relationship between HRD and Technology and Its Implications

Human resource development and its management is essentially a business-oriented philosophy concerning the management of people in order to obtain added value from them and thus achieve competitive advantage. It is a philosophy that appeals to

managements how are striving to beat off increasing international competition and appreciate that to do this they must invest in human resources as well as new technology.

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## 19.6 THE NATURE AND ALLOCATION OF WORK

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- 1) The diversity of factors governing the organizations of work with new technology means that neither deskilled or deskilled work will predominate even in the same firms or industries.
- 2) Allocation of work is not always based on criteria of finding the most technically suitable personal for the job but political and social criteria may predominate.

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## 19.7 TECHNOLOGY AND WORK

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The first statement in here opens the debate about the nature of the job changes in the companies.

What happens to jobs after new technology is introduced? Some writers approach this questions by suggesting a deskilling of work roles (Braveeman, 1974; Shaiken, 1985; Noble, 1979), others highlight the new skills that come out of new technology introduction. However, despite numerous studies in this area, the effect of new technology remains unclear. Consideration of new case studies is intended to help identify the factors that promote either a deskilling or reskilling of work. In the analysis reskilling is considered in two categories. Horizontal reskilling refers to the extension of skills at an equivalent level of the existing job. Vertical reskilling is the addition of skills at a higher level than workers have been accustomed to.

While there is insufficient evidence to suggest a general common scenario in the jobs studied was horizontal reskilling or deskilling, the most common scenario in the jobs studied was horizontal reskilling.

The scene emerges like this: firstly, that job allocation is based on technical qualifications, length of experience and ability to learn new tasks in new technology. On this basis redeployment of existing employees would be expected to be the most common course of action since these workers already possess knowledge and experience of a firms organization and operation. The second possibility considers social and political influences that may shift the emphasis away from the former scenario to the extent that these criteria dominate. Trade unions may successfully apply pressure for an allocation criteria to discriminate against non union members, or members with the shortest service record, should new technology involve job loss. On the other hand managers may attempt to employ new staff as a means of excluding trade union members or removing trouble makers. Other allocation decisions may actually incorporate discrimination against workers on ground of sex, race, age, or disability which amounts to social exclusion.

Strong evidence exists of the use of political and social criteria alongside technical criteria in the companies, to the extent that it predominates in several examples.

In this unit the effect of new technology on jobs is considered. The decision of job redesign may be as much political as practical. This study is therefore, interested in those factors that may influence a particular outcome in the way that work is organized. These may be based on theories in the job design debate. Some jobs may be subject to socio-technical design, others deskilled in the form of the labour process interpretation. Here we understand the phenomena using examples.

## Metalworking studies

Artemis, the maker of hydraulic components for aircraft, introduced CNC machinery, speeding up the time it took to machine components and reforming work organization. Workers now take more responsibilities for CNC programming and are flexible across these areas. Zeus, the diesel engine manufacturer, had made similar changes. There is evidence of workers taking on programming tasks and the merging of jobs was being encouraged. However, in Zeus this had less to do with improving service to customers but was more about cost saving.

### Vertical reskilling

Artemis engineering reported broader work roles with the advent of CNC and the 'partial FMS.' The manufacturing manager claimed that this was manifest to some extent in part programming of CNC lathes but this was not encouraged and only ever occurred at a limited amending level where workers had picked it up from production engineers, as in Jones's (1982) cases. Lack of encouragement to learn programming contradicts claims that those in 'technician' grade three posts, the highest grade of operator, were being groomed as potential production engineers. The addition of programming skills to operators jobs was also occurring in studies by Jones (1982: 1983) and Burnes (1989). In these studies, and in Artemis, this was to alleviate the shortage of production engineers who normally fulfilled the programming function.

The production engineers did not see this as a threat to their jobs, since they believed that it would take rather more than the training package of the operators to acquire a full repertoire of the appropriate skills. Evidence suggested that they were right. The factory had employed more production engineers with the advent of CNC machining centers, but they had not considered the merging of production engineer task with the jobs of grade three operators at that stage. The personal manager also expressed a strong preference to keep conception and execution firmly separated. So a workforce of operators, resembling production engineers, seems unlikely. It seems probable that if this does happen in the future it will be limited.

The overall effect of new technology in the factory has been to remove some skills and add others. Alongside technology, managers also saw the importance of 'qualitative flexibility' (job flexibility across a range of tasks), and this has also played an important role in redefining work roles. Similarly, work satisfaction has increased for those taking advantage of the module training programme, although some have decided they did not want to take any further training.

The main example of potential vertical reskilling in Artemis was the addition of programming tasks to production workers jobs. Similar trends are also evident in Zeus where there were other examples, notably evidence of supervisory function being passed down the hierarchy.

Zeus provided example of bigger jobs, including potential vertical increases in skills, where responsibility has been pushed down the hierarchy to supervisory levels and to the lower grades. Grade B staff have also been given responsibilities for assisting lower grades with problems they encounter. More tasks have been added to the jobs of the semi-skilled and unskilled in the plant, this will include aspects such as completion of paperwork, and self inspection. New technology has often played a role in making much of this job expansion possible.

Programming of CNC machinery was already taking place amongst the top B grade operators but very much on an unofficial basis. As in Artemis what operators learned was based on information gleaned from production engineers. This part programming by operators was not discouraged in the plant and the production operations manager refereed to it with some self satisfaction since Zeus was getting something for

nothing. What these operatives were remunerated for where the 'manual data inputs' (MDI) required to maintain the functioning of the machine such as changing the tape, checking tool wear, and making adjustments accordingly.

The Era factory of this company was similar in operation but some of the CNC operators here were actually involved in complete part programming and worked with the component from the beginning to the end of the process. This was official, yet still there was no additional remuneration for it. However these people were permitted to program only for the production of pulleys on two axis machines, which was considered a relatively simple task compared to more complex components on multi-axes machining centers. Elsewhere CNC operators dealt with varying levels of editing and trouble shooting of the production engineers' programs. The operators directly involved in these functions reported that they were happier here than they had been working with conventional, but felt restricted because they wanted to learn more about programming.

### **Horizontal reskilling**

In the repair and overhaul section of Artemis the use of computer test equipment was employed as an additional testing medium which indirectly reduced the workload since fewer products were returned as faulty as testing was quicker. Staff were freed to do other work, one effect of this was also to make the work more varied. There is also an expansion recluse in the job which, includes the inspection function being passed to the workforce rather than being handled by specialist. This, the assembly superintendent maintained, made the people doing the work much happier since they would never have known before it stringent testing was the reason that a fault was identified or if it was due to an error on the part of the workers. It was claimed that it is more reassuring to test and inspect your own work and the outcome of this policy has been fall in the number of rejects and reductions in 'down time.' The possible elements of control and surveillance that could be present in such a system, and referred to by Jones and Rose (1986), were not alluded to.

One of the most important features that restricted flexibility was the old individual bonus scheme. The industrial engineering manager explained that machines were grouped together and technicians are required to move between those machines, in some cases this would involve 'multi-manning.' The problem was a common one in which some workers earned much bigger bonuses than others, so it was difficult to encourage them to be flexible when working on a different machine since this might mean a much reduce bonus. Making the bonus scheme relate to the output of the machine shop as a whole, removed many of the distinctions that existed previously between the pay levels.

The flexibility changes stem from the problems associated with finding enough people with CNC skills, the right company attitude, and a full repertoire of conventional skills. The idea of flexibility was to allow the available skills to be used to their maximum potential, so that operators would be capable of moving to the areas where demand was to allow the available skills to be used to their maximum potential, so that operators would be capable of moving to the areas where demand was highest, which could mean operating CNC or conventional machinery.

The other element of the flexibility programme was to make the company a more interesting place to work by making the work more varied, with the motive of capturing more of the skilled workers in the area. Indeed, the industrial engineering manager claimed that workers generally, and particularly those involved in CNC, were now enjoying enhanced work roles.

The 'technicians', or operated using CNC machines, generally reported that they were much more satisfied with the new work than working on conventional. Multi-manning was a particular area of work that they identified as finding more interesting and varied, since it meant greatly increased responsibility. Multi-manning is clearly an area that is directly enabled by new technology. However, one operator suggested that a significant cycles of the same repetitive work, since it carried less responsibility. Similar sentiments were expressed at Zeus. Not all workers were in roles that required them to use NC or CNC, others experienced job expansion in self inspection. This requires the use of a personalized rubber stamp to identify that the part of the machining they were responsible for had been completed successfully. There has been no tendency no 'deskill' but in fact the opposite trend appears to have been taking place.

Zeus had been able to reduce the number of grades in their organization in an attempt to reduce manufacturing costs and achieve greater flexibility. The personnel manager explained the effect of this on jobs: 'So rather than have a large number of job classification different sorts of job boundaries, we needed to make jobs bigger so that we could make the workforce more flexible and reduce the total numbers.'

In some jobs this means retraining for new skills, and in the maintenance area, for example, this is a direct result of new technology, since the degree to which a job was mechanical or electrical was becoming increasingly blurred, a development also recognized by Rainbird (1988) and Jones (1988). So it was decide to merge the two jobs by interchanging the skills required, although the skilled workers still remain specialists in their own fields. This was of considerable advantage to the employees as well as to Zeus. The staff not only take more interest in the work and have more responsibility but also gain a qualification valuable outside the company.

### **Deskilling**

One assembly worker at Artemis made his highly divided and closely timed job sound like scientific management organization. But the difference was that the small repetitive parts of the job were performed by one worker as a range of tasks, and not divided up between workers as individuals tasks. However, the fragmentation clearly bothered operators who would have preferred more control over their own work. This shattered the management's image of a harmonious workforce. There was also concern about the quality of the product since timing encourages short cuts which may lead to problems.

However, the distaste of timing was mellowed by the tendency of the operators to rotate allowing them to get the feel of the whole component. Although there was clearly a destruct of flexibility as a possible convert means of rate cutting. Nevertheless, the management aim was to continue training with a view to further increasing 'qualitative' or 'functional flexibility' (Atkinson, 1985; Atkinson and Meager, 1986). Nobody mentioned that these flexibility measures may also embody element of control but job rotation and enlargement are consistent with this possibility.

Like some workers at Artemis, at Zeus one of the senior shop stewards, an unskilled assembly worker, argued that he was happier with a simple continuous series of highly divided tasks, rather than the present scenario of being moved from one place to another and performing quite different jobs. As at Artemis, the trade union had cooperated with changes for the good of the business although one senior shop steward saw new technology as causing job loss, another as brining repetition and boredom consistent with labour process writers (Braverman, 1974; Shaiken; 1985; Noble, 1979). CNC matching, for example, was described as button pushing, suggesting an ignorance of what is really involved.

The appearance that work is easier overlooks the additional responsibility or new knowledge that may be required. For example, computerizing of certain pieces of equipment now means that operators are able to perform functions that previously would have the information they require it is easily accessible. Hence control has become more machine oriented, although the supervisory functions is still recognized as being important in the organization. Jones and Rose (1986) also found less need for direct supervision due to the surveillance capability of new technology. This denies a labour process model, although control over work may be attained by an alternative means to deskilling.

### Summary – metalworking studies

Artemis has experienced a series of work changes. In the case of CNC, these included multi-manning and unmanned running. These are both areas enabled by CNC equipment, and workers were particularly satisfied with the work variety of multi-manning. Elsewhere quality inspection was an addition to all skilled jobs. There is no evidence that deskilling has taken place but the use of the stopwatch, and fragmenting of tasks as components within jobs, rather than seeking jobs, rather seeking jobs as a whole, caused dissatisfaction for some workers.

Zeus provides a very good example of a company that has successfully achieved the expansion of jobs and addition of tasks without having to pay extra for them. This point is taken up in the next chapter. Zeus's changes in jobs are generally to add new tasks to existing jobs. A good example of this is the transfer of electrical skills to mechanical craftsman, and mechanical skills to electrical craftsman. But at semi-skilled levels CNC operation has meant the learning of programming skills, quality is now the responsibility is required. Generally workers reported greater satisfaction.

The metalworking companies display clear attempts to expand key jobs particularly with CNC machinery, but they stop short of ceding full responsibility to the workers. CNC operatives in both companies expressed a preference to CNC work over that of conventional operation. However, in other areas, workers recognized the benefits of highly detailed work, arguing that this meant there was a little responsibility, and as a result less job related stress. There was strong evidence in a range of jobs of trying to achieve flexible operations operation, which would then relax job related stress. There was strong evidence in a range of jobs of trying to achieve flexible operation, which would then relax job definitions, blurring old demarcation boundaries and solving difficult allocation problems. For example, in the maintenance function at Zeus. The same policy often allowed Zeus not only to enlarge jobs, but also to avoid paying for the addition. Workers in both companies generally suggested that they were happier with more varied, responsible work, but others suggested that repetitive work was better because it offered less responsibility and stress. The evidence here is against any one outcome, but consistent reflecting a variety of skills levels.

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## 19.8 MANAGING THE TECHNOLOGICAL CHANGE IN WORK ORGANIZATION

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In the work organization aspects of programmes for the introduction of new technology, formally planned strategies for change are rare. More often changes are dealt with on an ad hoc basis as and when problems arise. Rationales for the use of new managerial control over the workforce are put in force. There is an inextricable link between planning and the actors involved in this process. The latter part of this hypothesis maintains that involvement in the planning of work organization is confined to senior management levels and rarely reaches the workers and users.

Following on from consideration of the nature of work, and the allocation of work after new technology is introduced we consider the decision-making process and the justifications for new technology. There are three issues: strategy, rationales and discussion for change. These three issues are closely inter-related.

Strategy often forms the basis of change. The presence of strategy suggests that managers set aims that a strategy is directed to achieve. Aims without an established way of achieving them leaves the outcome in question. In respect of work organization, a lack of strategy, and a tendency to deal with problems on an ad hoc basis, may result in an untidy and ineffective use of human resources. Lack of definite strategy is a finding of Rose and Jones (1984). Braverman (1974) has suggested not only that strategy exists, but a general tendency of deskilling to achieve managerial control is evident. Child (1984) on the other hand sees strategy for deskilling and control as secondary to other motives such as efficiency, and Salaman (1986) has argued along similar lines.

Rationales or justification for introducing new technology may not be guided by any strategy. Rationales are different from aims. An aim is an intention of what is to happen, but a rationale is often applied concurrently for retrospectively to explain why a particular development occurs. Rationales may relate to aims but need not to do directly. It is possible to have a very wide range of justification for particular changes which vary according to departments and individuals, and have occurred independently of aims. Wide variation of rationales may also be due to a lack of strategic planning because neglected issues have to be picked up elsewhere at a later time. Hence, an absence of corporate planning leaves considerable room for line managers to interpret and implement their own rationales for introducing new technology.

Strategic planning, aims, and some rationales in new technology programs, are often informed by consultation that takes place prior to the making of policy or the implementation of ideas. If this consultation, in respect of work organization, is confined to managerial staff, essential knowledge of jobs will be neglected. Cressey (1990), for example, argues that worker involvement is rarely prominent at the policy-making stage but is more common later in the implementation process. A result of this may be that work organization and specific job definitions may allocate tasks inappropriately, and possibly, fail to include some essential tasks, leading to further incremental changes, and creating further problems of work allocation.

Strategy for job design is absent in most cases. Rationales are varied, but do suggest motives of managerial control over workers in some cases. While influenced by various actors, the change process rarely includes worker consultation. Where workers are involved, any discussion is often confined to advising staff and not listening to their views.

### **Managerial Strategy for Introducing new Technology**

At the root of all decisions to introduce new technology there must be some form of planning, even if this is only to decide what to buy. Key decisions are, consideration of expenditure, and the purpose to which the new technology is to be put we now examine case studies:

Artemis, producers of hydraulic systems for aircraft, had technical reasons for their use of new technology. The precision nature of the products they produce meant that very long lead times would be involved. CNC machinery was capable of speeding up the process because more machining could be done on one machine, and less time was spent in transferring the component between machines.

Both the manufacturing manager, and production director at Artemis, argued they had spent a good deal of time in planning and preparing a strategy for the future, one result of this is the grading structure. There seems, however to have been a much greater investment in the planning of the technical aspects than the jobs themselves. The machine shop changes were considered five years previously and involved details of machine tools, the general effects on the workforce in terms of numbers, and back up requirements such as production engineers. The importance of job planning was played down since CNC had existed for some years and little change was envisaged. However, the machining centers arriving in the factory were quite different to anything the company already had, and the concepts of multi-manning and unmanned running were known.

One area where evidence of strategy for job design was offered, was in the form of the module training package that the company devised to improve flexibility. This also formed a means of progressively upgrading the skilled workforce. Nevertheless, while workers were consulted by the superintendent to establish where they were in respect of newly conceived job gradings, and the level of module programs to be aimed at, it was felt by the technicians themselves that the jobs were not planned but just developed, that is only way to describe it really, as they've got more technology in then everybody's growth with it.

It is apparent from this statement that the process, for workers, was more one of adding bits to different jobs as the new technology demanded it than could be described as strategy. Consistent with work by Burnes (1989) and Hyman (1988), planning was limited particularly as far as the details of new task structures were concerned. Manager may claim that shopfloor perceptions were inaccurate but by their own admission planning for CNC job had been limited.

Managers and workers contradict themselves on the existence of strategic planning at Artemis. However, in areas such as job design, managers sometimes failed to see the need to plan. Whilst planning may have existed in the choices of technology system this was based on technical criteria and neglected job design issues. At Zeus, consideration of job design appeared to be more concerned with avoiding the concession of grade increases.

Zeus, the diesel engine manufacturer, wanted to reduce their costs. A depressed market for diesel engines highlighted over staffing, and new technology instruction provided an opportunity for reducing staff numbers by making production more efficient, and merging the remaining jobs.

One of the key production operations managers at Zeus explained that the company had not always planned so carefully. However, more careful planning was prompted when a grade was conceded on new computerized test equipment that was introduced. From this point a system of thinking ahead and adding tasks to jobs was devised, even though these functions had not yet been established in the firm:

.... We've tried to think several years ahead as far as the bounds of technology of saying you will use strip readers and bar codes and we have added those things in, even though we didn't have them.... And what we are saying in we have got 500 of you colleagues here that want to volunteer to be redundant and we are prepared to let them go, but to be able to let them go we must change our structure, halve our inspection department, do ways with our progress department and you must take on board some of their skills

Part of this involves appealing to the workers moral duty to help their colleagues. As in Artemis, there were also increased rewards on offer, which seems common in cases of applying new technology.

In other areas, the formulation of a strategy that dictated a certain financial commitment, had not been followed through precisely because of the financial costs.

One production engineer described it as the company making a major investment in machinery and then 'pulling back on the last ten bob.' The machinery in this case was CNC, and the original commitment was to develop the operators' programming skills. The measure only went part of the way and the result is a gap in the knowledge of operators and unfulfilled expectations. This generated a degree of bitterness amongst the CNC operators interviewed. Perhaps worse than having no strategy at all is having a strategy that is abandoned before it has had a chance to develop (Jones and Scott, 1987). The irony is that the technological investment is considerable and the full benefit is not being obtained from the machines because the commitment to train the operators had not been fulfilled. All the emphasis is once again placed on the machine and not enough on the operator and the jobs.

### **Rationales for new Technology Introduction**

Here, rationales are taken to mean justifications for introducing new technology. Rationales differ from aims since aims are prospective and refer to intentions. It is expected, that unlike aims, rationales will be numerous and quite different according to the perspective of different actors. They will also depend on the extent to which strategic planning has taken place in companies. Where there are gaps in planning has taken place in companies. Where there are gaps in planning, rationales are often invented by line managers to explain changes they wish to make which attributable to new technology.

### **Metalworking studies**

Rationales for new technology at Zeus were identified by production managers as improving productivity and quality. The industrial relations manager saw them as a means of reducing staff levels and increasing the accountability of staff. Artemis identified a series of rationales close to the organizational aims. Overwhelmingly, economic justifications were prominent but often defined in terms of improving competitiveness through shorter lead times, quality and service.

New technology was not expected to provide improved productivity and quality at Zeus in the short term, but it enabled them to come more easily over time. Technology was also used, more specifically, as a medium to achieve an alternative organization of jobs. For example, aided by computers, the stores are able to see if stock is running low, and can then search to see if there is an alternative stock elsewhere, thereby ensuring that the stock is maintained. Before, it would have necessitated a trip to the stores to inspect and physically establish the stock levels.

It was further argued that technology provides better quality products in the case of CNC, and better customer service, where the computer is now able to locate orders in the factory, so the customer can be kept informed.

Conversely the industrial relations manager at Zeus justified new technology in terms of a need to reduce the number of employees in the factory, other changes in jobs were also aimed at this idea, and were not necessarily the result of changes in technology. For example, amalgamation of the setting and operating functions.

In case of the maintenance function the job change was directly as a result of the technology, and particularly of CNC machining. As Rainbird (1988) has pointed out, new technology introduces particular problems in maintaining traditional demarcations. Training proved inadequate amongst the fitters and electricians because new equipment demanded knowledge of both trades. The maintenance supervisor explained; 'the way machine are build it's a problem sometimes to say whether it's

mechanical or electrical, or whether it's hydraulic.....'

The resulting problems were that fitters were always waiting for electricians, and electricians for fitters. The equipment that was being introduced also dictated a need to take electricians more into the field of electronics. So training was instituted to teach electricians mechanical skills and fitters electrical skills so that each could do eighty percent of the others job. This now means that one person can take responsibility for a complete job.

Zeus has also pursued expansions in the tasks of jobs based on new technology and justified them because they allowed cost cutting. The removal of quality inspectors saved money and, arguable, it improved quality although the workers on the shop floor were at odds with the latter view. At Zeus the personnel manager raised accountability as another rationale. Machine operators, including CNC workers, must be accountable for the work they produce. Some operators saw this as providing some pleasant spin offs, in terms of greater responsibility, that served to enhance their jobs, others were more skeptical. However, contained within such an approach there is a potential element of surveillance, since manager required the workforce to check the work at each stage and confirm that it passed quality standards by certification with personalized rubber stamps. If a component contained faults, the individual responsibility could be identified easily. Here, managerial control motives may actually underlie the apparent enhancement of work.

Zeus identified a range of justifications for the introduction of new technology. These range from technical reasons of quality, economic reasons of increasing productivity and reducing the numbers of workers employed, and control issues of accountability. The rationales given often deviate from the aims of the company but they reflect the specific interests of the respondents. Managers at Artemis claimed that changes to jobs were unrelated to the introductions of new technology in themselves.

At Artemis, the reluctance of both the manufacturing manager and the production director to concede that the job changes had in any way been a function of the new technology, contrasted sharply with the opinion of the machine shop superintendent and the senior shop steward. The personnel manager saw new technology as a catalyst in job changes, he saw new technology and job changes as inseparable.

The machine shop superintendent went on to argue that the rationale for new technology was mainly the reduction of long lead times which were two or three years but now are down to just one year. In common with studies by Jones (1988) and Burnes competitive in terms of quality and price. But also less maintenance and high quality were combined with reliable repeatability on CNC machines. The personnel manager agreed but added that one production unit which had provided 'a long line of bread and butter' was now required less and, as a result, the factory had to be tooled up to accept a more diversified product range. Here there seems to be a shift away from a Fordist design structure in that new technology is employee to increase flexibility to handle more variable product groups (Sable, 1982).

Economic justifications for new technology introduced were prominent at Artemis. The personnel manager claimed that without new technology the competitive position of the company would be threatened. However, the industrial engineering manager was less prepared to assume that benefits would necessarily be produced by the technology: 'unless you can lower costs overall there's not much point in introducing it. That encompasses improving quality and reducing lead times' (Industrial Engineering Manager). Here there are a series of rationales for new technology introduction; precursors to an ultimate goal of lower costs.

Much of the new technology development in the new build assembly area, and in repair and overhaul, seemed on keeping the customer satisfied. The computerized test

and pretest units employed were purely to simulate the kinds of test that customers would put the hydraulic units through. The need for the equipment arose because customers were using more stringent testing equipment than Artemis and rejecting units as a result. However, the technological introductions in both new build assembly, and in repair and overhaul, were minor and the repair and overhaul manager denied that technology had any significant effect. Instead he emphasized the policy to increase the flexibility of the workers in accordance with other job changes. The two departments provide an excellent example of this flexibility in their ability to exchange staff when the work load dictated a need.

On the one hand there was a reluctance to attribute job changes at Artemis to new technology, on the other these were seen as inseparable. On the whole new technology rationales were close to the aims of the findings of other researchers (Jones, 1982; Burnes, 1989).

### **Technology, Planning and Change: The HRD Perspective**

The section of demonstrates that it is technology that receives the closest attention when planning for change. Jones (1988) has pointed out that discussions for new technological change very rarely include workers. Both Artemis and Zeus are no exceptions to this; and tend to confine their discussion about technology and jobs to higher levels in the organizational hierarchy.

In Zeus, decisions about the way jobs are designed are taken by the relevant production manager, operations manager, and senior unit supervisor. But a decision would first be discussed with all the machinery managers, although the gradings are controlled by the industrial relations department. The new technology changes, that were recently introduced, were based on a number of options which actually involved different combinations of employee grades, so there is a degree of interactions with the industrial relations department.

Decisions for machine purchase tend to be handled by a technical team. The production manager and operations manager would be involved in the decision making, but the capabilities of the machinery, and the decision to buy, rests finally with technical personnel. Some operators may visit a manufacturer to see the machine being made and for briefing, and then be closely involved in 'proving out' until they take over completely. However, many decisions involve major investment considerations about the whole plant, and concern the allocation of funds to one area or another. For example, whether to put money into assembly or machining. Such decisions are centrally based and lie with senior management. While the purchase itself is being considered the production management communicate with the technical department, and consider the repercussions of the machinery for job design and grading. Here again the instrumentalism of Zeus's managers is illustrated, the main concern was that machines could be implemented 'without causing us to introduce grade B plus or something silly because of complexity of the machine...' (Production Operations Manager, Zeus).

Perhaps this concern was due in part to the fact that he had recently been promoted from foreman, and consequently was more aware of what was happening on the shop floor. Nevertheless, he did point out that people are sent to the machinery manufacturers for training and they later prove out the machines. In this way it can be claimed that they are involved at the planning stage. Another part of the consultation process was carried out in improvement teams. It is claimed that the reason for asking people lies in smoother implementation and less modification later on.

At Zeus main decision making involves senior management, technical decisions are taken by technical staff in the technical department. The industrial relations

department is brought in where there are grading issues to be resolved. Generally two views were expressed by general managers on the involvement of shopfloor workers in discussion for new technology. One group wanted to consider job design issues because, with the addition of new tasks, they felt that higher grades might be forced on them as a trade off for workers fulfilling those tasks. The alternative view felt that workers' views were important in their own right because of their knowledge of the work.

At Artemis, the personal manager, machine shop superintendent, manufacturing manager, and industrial engineering manager discussed the changes in technology in the origination. The presence of the personnel manager points to some awareness of the effect on jobs.

The production director takes the evidence from this group, devises a rationale, and passes it to the board of directors of a final decision. Managers claimed that there were also workforce discussion, held within quality circles or through informal contract, about how the various flexibility changes were to be implemented, but these were limited and not always successful. Discussion with workers seemed to have little to do with dialogue and with receiving workers' views, but had more to do with managers advising the workers, but had more to do with managers advising the workers what was to happen.

Otherwise, managers asked the supervisory staff for their impression of the general workforce's feeling. Nevertheless, proposals had provoked a strike over the removal of individual bonus payments, and there was also concern about that would happen to inspectors with the introduction of self inspection. Members of the workforce interviewed expressed the view that, both the industrial action, and expression of concern, had seemed to impress the management. The evidence suggests that these were issues that could have been resolved without strike action, had consultation been more extensive. But the fact that strike action has been used perhaps highlighted how remote effective consultation was.

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## 19.9 RELATING HRD AND TECHNOLOGICAL CHANGES

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### The Problem

#### *New technology changes jobs but how are these job defined?*

Job definition and work organization is assumed by technological determinists to be directly informed by the kind of technology employed and therefore unproblematic. Woodward's (1966) work, for example, asserted that management organization varied according to the nature of manufacture, whether single units or large or small batches. Similarly, Blauner (1964) considered that different forms of technology offered different forms of control. Recognizing that social and political factors were involved in the process Braverman (1974) nonetheless still maintains that there is one direction of cause and effect associated with new technology introduction; in this case it is deskilling for managerial control based on economic determinism.

These uni-directional approaches are widely disputed by many others who argue that's there is choice in technology and work design (Littler and Salaman, 1984; Davis and Taylor, 1976; Wilkinson, 1983). These choices are influenced by a range of unique factors some of which are extra-organizational. Thus, even two identical technologies may ostensibly result in quite different organizations of work.

One problem in managing work reorganization stems from this choice of new technology and design of jobs. The key question that emerges from here then is: what are the processes in new technology introduction that inform the way jobs are designed

and who are the actors capable of influencing the process? Given that the process involves a mixture of technical social and political variables the use of new technology will fluctuate according to these forces. This variability in the decisions making process itself creates major dilemmas and debates in attempts to arrive at the most suitable job definitions and work organizations.

Various decision making processes are involved; from the initial implementation through to decisions about work organization and who will fill the individual jobs. The key actors are the managers vested with the authority to make the decisions, the workers directly affected by the decisions and the trade unions perhaps with the power to influence the outcomes. But to what extent do managers recognize the existence of, and how much do they exercise choice? How much direct influence are workers able to have? How far do trade unions become involved in the job definition process? These are some of the questions that this book addresses in the following chapters.

Accounts already exist that have tackled issues relating to choice and job definition such as the socio technical approach. Another account (Child, 1972) has suggested that a range of choices are often available but failure on the part of managers to consider these means they choose ‘.....unconsciously in blind response to immediate pressures’ (Rose 1988). However, there is an important connection to be made between job definition and the various processes of decision taking that emerge when new technology is introduced. Technological determinism and economic determinism are inadequate models for explaining these processes. Yet in pilot studies managers regularly referred to the lack of choice available in work organization once the new technology itself was chosen, they assumed the work organization issues to be unproblematic. However, contradicting this deterministic view, criteria distinctly socio-politician in nature were being applied in job definition and allocation decisions. This contradiction forms a central plank of the study which aims to identify and explain some of the job definition aspects of work organization issues arising from new technological change.

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## **19.10 DEVELOPING THE CHANGE MINDSET**

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‘The times they are a changing’, sang Bob Dylan, and ‘more’s the pity’ perhaps you can say. Perhaps you are a manager in a manufacturing or service company or a public authority, and they’ won’t let you alone to get on with things. Always something new is coming in, the organization is restructured, the company gets taken over, or new government regulations or deregulations come in and change everything. Change – it’s the one aspect of life that never seems to change. It happens all the time. The only thing is that there seems to be more of it and it happens more and more quickly. There’s never time to catch your breath.

You are then totally fed up with change. ‘There is not stability nowadays.’ “You no sooner get things sorted out and there is a restructuring, a product change or a new competitor running away with our business.’ ‘You just get the line running smoothly and rejects to a minimum when in comes some new technology or a new product is introduced and chaos is let loose.’ You sigh for the old days when you knew where you were; yes, things did change then, but much more steadily. You had time to absorb the changes – or so you think now.

We have the outrageous aim to help you actually to welcome change and improve your own prospects and that of your enterprise by seeking change, creating change and even loving change.

### **What is Management?**

You are a manager. What does this mean? The word derives from the ancient French

work for handling horses and a later one for handling the affairs of the kitchen. Cynics might replace horse by donkey, but all would see the analogy of keeping an organization alive through the activities of the kitchen.

### **What is management?**

‘Management is risking yourself in the mobilization of resources and relationships to add the enterprise.’

Every phrase was debated and agonized over a long period.

### **Risking yourself**

Every time you make decisions you risk yourself. You chop off one branch of a tree in favour of another. That is the meaning of the word ‘decide’, from the Latin *decidere*, meaning to cut off. It’s risky business, because you can’t easily stick back the branch you have chopped off.

### **Mobilising resources**

Nothing happens without resources; there are never enough of them and they won’t always readily provide the advantage that you seek. So there are people, materials, money, markets, ideas, components space and time and many other resources all requiring to be mobilized before you can produce and sell what you have to offer. The word ‘mobilise’ has a very active ring it, and management is about activity.

### **Mobilising relationships**

David Cox, who used to be managing director of Ind Coope Brewery in Burton and successfully established team working there, pointed out that mobilizing resources would only take you so far unless you got the relationships right, especially those of people. People meant workforce, suppliers, customers, shareholders, government, community – all the stakeholders. They had to be given a sense of sharing ownership for what was going on – and managers were the prime influences of this process. They were people-linkers.

### **To add value**

We would have said profit, and often this is what we mean. But we can be in the voluntary or the public sector where the community has to be served, effectively and economically, but where it has been decided by the government or people or both that the activity must be run outside the normal market mechanisms of shareholders and stock markets. We are dodging the debate, feeling that to add value covers all kinds of business activity.

### **To the enterprise**

Not ‘organization’ or ‘firm’ or ‘business’ or ‘company’. All these would be perfectly appropriate, but we wanted a word that would have a forceful, thrusting, innovative, creative, exciting flavor, and enterprise seems to capture that approach.

### **Your power as a manager**

So, as a manager, you are almost bound to participate in the processes of change in the enterprise for which you work. But how? In you company you may feel that you have a little chance to influence the process of change. All the decisions are taken at the very top and what the chief executive says is final. So the change decisions are handed down and you have to get on with handling and implementation them.

But surely you will have an effect on how the company or enterprise performance in the implementing of change? Everyone in any enterprise is involved in change in some way or other, and its success or failure depends on everyone. The ideal company may well consult a large number of its employees about decisions concerning change – what to change, how to change and when to change. If it does, its employees will have a sense of ownership in the changes and are more likely to co-operate in their implementation. Of course there are, in even the most participative of companies, situations where there is no time to consult everybody or where secrecy is of the essence, such as in some merger or acquisition decisions. And some companies are just autocratic anyway.

But whatever the situation, at all levels every manager has some contribution requires a certain attitude of mind – a certain mindset. To identify this mindset, and to assist its growth in the readers and indeed in the enterprise for which they work, is to be explained. Since there is so much written about change that is defensive, we consider it was time to present a positive angle to help managers at all levels to welcome change, to embrace it, to be looking out for it all the time, to be recognizing it as they very heart of life in general and business life in partner.

### **Change at the heart of life**

We really mean that change is that the very heart of life. Think about it for a moment, independent of business as such, and look at the role of change in general. You could say that-life is change. From conception to death we are changing physically every microsecond, and we are changing mentally, emotionally and spiritually. Physically we now that that in every seven year period every molecule of our body has changed, very slowly and gradually, and we are certainly not the persons we were. Similarly we are not the same in our mental, emotional and spiritual senses.

For one thing, in every waking moment, and probably when we are asleep as well, we are taking in new impressions and rearranging the old impressions in the light of the new, so that there is no such things as stability. Neither would we want there to be. Several significant schools of philosophic thought have stressed this.

### **Life as process**

The celebrated mathematician and philosopher Alfred North Whitehead spent most of the autumn of his life thinking through what it was to be a human being. His reflections led to the conclusion that a more apt description would be ‘human becomings’, because we are never in a static state of being but on the move all the time, in process, or changing, every micro-microsecond. His view became known as ‘process philosophy’. In his view we are each of us an ongoing series of events, each events, each even springing out of the previous one and all held together by the thread of memory. We have already mentioned the seven year physical change, but it is equally true of the mental that nothing stays still for as much as a second.

We are all the time taking into our minds new impressions through the senses. We see things, we hear things, we smell things, we touch things, we taste things, and beyond that we have feelings about the messages our five senses bring to us. They make us sad, happy, impatient, excited, worried, angry, uplifted determined, uncertain, jealous, envious; they make us love, hate, sympathize, empathize, co-operate, oppose, fight; and these emotions, being stirred, provide us with energy and impel us to action.

All these impressions and the emotions they still are recorded in our memories. Everything we have even seen, heard, tasted, touched, smelt, and the related emotions, are indelibly written down in our human audio-video-taste-tactile-olfactory tape machines in our brains or at least in our minds, if these are not the same. These data

are all getting added to all the time. As more ingredients come in to the mind, so the earlier ones seem just a little different – they are expanded or perceived in a new light.

If we had the whole of the new tape machine playing at once, we should ‘go out of our minds’, and so memory is selective. The whole range of material is not making its presence felt consciously all the time. A lot of its presence felt consciously all the time. A lot of it buried, as we sometimes say, ‘in the depths of the unconscious’, but it is still there and gets called up by new events, and by being linked with them it is changed.

Edgar has a vivid experience he quotes to illustrate this:

We have an exciting picture of the human mind as a flow of impressions, and emotions and ideas which connect them. The thinking we do about the impressions is part of the change into new connections presents them in new light – indeed change them.

So if change is the microsecond by microsecond essence of living, our theme of the need for change mindset should not be difficult to absorb, because it fits with the very structure of our minds and of our thinking>

### **Life as interaction**

A second contributor to this perception of existence is George Henry Mead, late of Chicago University. He lectured much and wrote little, but his students felt that what he was saying was so powerful that they took detailed notes and produced his material so that we, after his death, can reflect upon it. He gave rise to a sociological and psychological theory, academically known as ‘symbolic interactionism’.

A major aspect of it is that people interact by symbols – words and non-verbal signals in particular. Every interaction makes a contribution to the mental make-up of the other. When you have had an interaction with someone, you go away a different person. You have each added something to the other. Mead described each individual as having or being a central ‘I’ around which a whole lot of ‘mes’ – stable and derived from the interactions with others – were revolving. The ‘I’ then constantly reacted to all these. It was, of course, a concept rather than a literal fact, but when we think about the people who have influenced us and changed us, we know it to be true. You who have read these words, as a result of our interaction, are a slightly different person from the one you were a few moments ago. Being human and change go together.

### **Living experience**

There is a third guru who has something to offer on this theme of human becoming and what they become. Fortunately he is very much still with us at the Case Western Reserve University in Cleveland, Ohio, The reference is to David Kolb. In mentioning him we come very much close to our business themes, as that is the area of his academic activity.

He is the formulator of the well-known Kolb Learning Cycle. To sum it up, he says that learning is all about having experiences (in line with Whitehead and Mead, with life as a series of experiences which make us what we are). He goes on to say that the next stage of the cycle or circle or spiral (see Figure 1.)

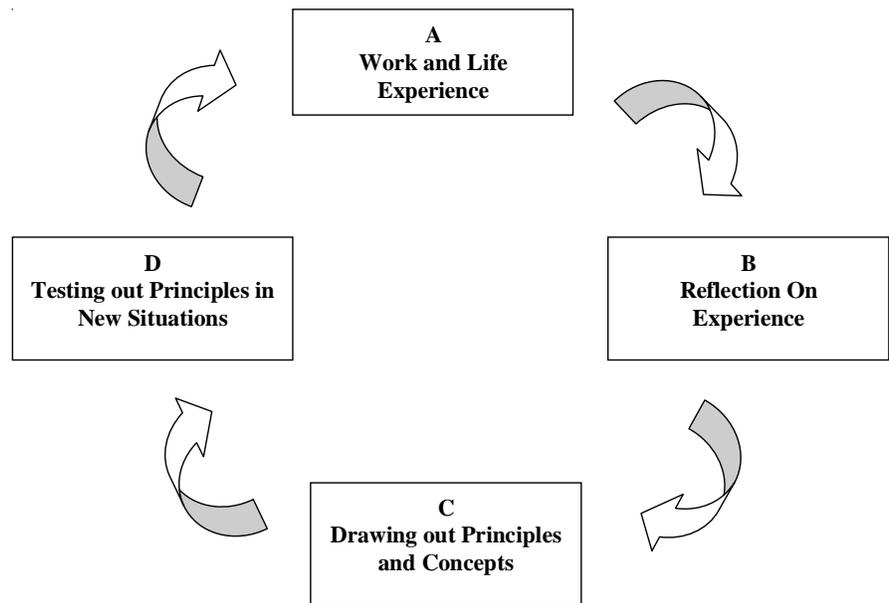


Figure 1: Learning cycle, based on the ideas of David Kolb (1984)

### Experimental Learning

is that we reflect upon the experiences that we have just had. Thirdly, we draw out some concepts and some principles from this reflection. Finally, we test out the new concepts and some principles from this reflection. Finally, we test out the new concepts in new situations so that they become part of the ongoing experience, on which we shall continue to reflect, and so in a never ending circle or even spiral.

David Kolb does not use the words ‘process’, ‘interaction’ or change’, but this is what he is talking about. It is noteworthy that he uses the word ‘learning’, and if you think about it, all these ideas come together and form a framework within which we can think about change and even learn to love it and welcome it. Learning is itself a process of change. Something is added to our perception and prepares us for the next impression, which will change our understanding yet more, however minutely. What David Kolb is talking about is the normal scientific approach, where observations are made and reflected upon to yield theories from which hypotheses are derived and tested out in action, creating new events and experiences.

### Change is learning

The Kolb contribution is a significant one because it practically equates change and learning. When you learn, you change. When you change, you learn. A book on change is therefore also a book about learning.

Reg Revans of Action Learning fame would make a distinction with two little symbols  $L > C$  and  $C > L$ . If learning is represented by L and change represented by C then the first symbol means you are ahead in the game – you are learning faster than things change. The second can spell disaster, because things are changing faster than you are learning, so that you are behind in the race.

Nevertheless Revans is in harmony with Kolb in that his contribution of Action Learning is based on the concept that people learn more from reflection, discussion and working together on real live issues than from being lectured at. They learn from each other and the learning is relevant, and even when the classroom is being used for input, it is important to provide plenty of scope for learning in this way.

## A positive approach

These perceptions of what it is to be human can help us to take a positive approach to change and make it work to our advantage and to that of our enterprise. You are only really alive when you are changing. It is the essence of personal growth, it is the basis of relationships with other people, and without it there is not learning and no progress.

Yet even when we acknowledge all this, we are prone to resist change. We fear it, we avoid it and we sigh for the status quo.

We aim to help you to generate for yourself an approach which will enable you to come to terms with change and go beyond, to enrich you life both personally and in the business sphere.

The principles gained from looking inward and outward to the specific area of business and managerial life where, as Sir John Harvey-Jones has expressed it:

.....the task of industry is continuously, year on year, to make more and better things, using less the world's resources. Management in particular is not about the preservation of the status quo; it is about maintaining the highest rate of change that the organization and the people within it can stand.

## Technology change and Reaction Management

### *Rigidity*

People who are concerned with security, procedures and rules will say is the right way to do something, and they are inflexible about changing this or that rule. They operate from a purely logical point of view, and don't believe they can show their emotions or use their intuitions or even express a view at a meeting without checking first that it is correct. This is likely to be a defence against anxiety and against a show of feelings.

Their colleagues regard these people as having left their hearts in the car park when they come into work each morning.

To cope with this kind of resistance to change it is necessary to demonstrate to them in a very logical fashion the long-term consequences of their behaviour. An emotional argument will not succeed, but a logical argument might. We have to understand that they find great comfort in knowing the rules and the system, and sticking with them. Such people will hang on to their rules and systems for as long as possible, because they represent stability in an unstable world.

### **Overreaction**

In the kind of organisations where' people overreact, drama and crisis are the norm. In many ways this is the opposite of the situation where rigidity prevails. This tendency towards organisational hysteria is usually a defence against true information and logical use of it to solve the problem. Some managers enjoy living in permanent crisis, because crisis management is the only kind of management they know and understand. It is easy to get so wound up in the excitement of the crisis that logical thought and rational evaluation of new data are not possible.. There is no time because of the crisis. People who feel comfortable in displaying their emotions are drawn to this kind of organisation, living on a permanent kind of stage, giving marvelous performances, but never getting anywhere.

The technique for handling this type of reaction is to empathise with them and help them in the process of solving the problem for themselves. A major mistake would be to solve the problems for them. This kind of person is delighted to off-load problem-solving on to anybody else who will take it on. If they are allowed to get away with this, they will never actually implement a solution themselves, because naturally they are having a crises and they have no time.

The third pattern is where everyone knows the problem and has thought about it in some depth. But no one wants to take responsibility for making anything happen. No one seriously wants to take ownership of the problem that has been identified. It is easier to blame someone upwards, sideways or downwards 'rather than to. take action yourself. People create a classic victim culture and therefore find themselves unable to move. They spend most of their energy blaming others rather than moving forwards. Whatever solutions emerge, there is always a 'Yes-but' .

The way to handle these people is to confront what, in essence, is passive behaviour.

A colleague of ours worked with an organisation recently which was claiming to be stuck on a change process. In going round and talking to a variety of staff, he was told that what he was doing seemed very similar to a study that had been done five years previously. When he asked for and got hold of the details, from five years ago, it demonstrated that almost identical data was being discovered and almost identical problems were being faced then! The company had failed to move forward at all in the intervening five years.

Our colleague confronted the senior management of that organisation with this failure to move, or even to use the data that was available, and brought them to the realisation that there were things they could do that would help them move from their present position. But they had to take responsibility for those actions, and accept that they would make mistakes in their choices. Our colleague refused to enter into debates about what the best solution would be, because he realised that the members of the company were far more knowledgeable about the problem than he was. They could always out-argue him as to why they shouldn't change. The only thing to do was to take the organisation by the scruff of the neck and get it to do something, almost anything.

### **Suspicion**

Where this prevails, there is a kind of organisational paranoia. Managers and employers spend their time protecting their own, patch, protecting their own back, and scoring points off others. The organisation is characterised by chronically low levels of trust. This approach is usually a defence against the belief that 'someone will get you if you don't watch out'.

### **Action orientation**

For some people action seems to be the best defence against thinking. Companies get obsessed with work, short-term results, and tasks being done - any action so long as everyone's busy! All the energy of the organisation is concerned with what you do rather than why you do it. It is in this kind of organisation that people do things right rather than do the right things. Then, combined with a need for rules and systems, this can be a

most formidable organisation. In the short term it will probably be very effective because of its energy levels. In the long term it may chase off down a blind alley way and become completely marooned. This kind of organisation can become obsessed with its own short-term success, and believe that to do better you have to work harder, not smarter.

The strategy for helping to deal with this blockage is first to review the way things are done - the why not the what - and ask people about their purpose and mission. What actually do they get out of their work? Why do they need to be so busy? These are usually difficult and painful questions to be asked, and it will be easy to brush them off as irrelevant. There is always the pressure of more tasks and more activity. The short-term success of this kind of organisation is always a good excuse for not

reviewing the longer-term performance as well. Eli Goldratt (1984) has shown how concern to have everyone busy all the time in production situations can create serious bottlenecks.

### **Overcoming the resistance**

The single biggest problem in all these behaviour patterns is fear of the unknown. We would like to offer some approaches to helping people overcome this fear.

The hologram

The first is what we describe as the hologram effect. Using laser light, a holographic image can be created on photographic film. When the film is illuminated, it will give the appearance of a three-dimensional object. With conventional film, taking a small fraction of the negative gives you a small fraction of the picture, but with the hologram, a small fraction of the negative can still produce the whole picture. On the hologram, each part of the negative contains data about the whole image. We believe there is an analogy to be drawn between the hologram and a change process in an organisation. If you are operating at the two levels of task and culture, then if the change process is going well, it should be possible to take even a small fraction of the organisation and see in it examples of the change process as it affects the whole organization.

### **Listening to criticism**

Of course, these engineers had discovered one other principle of avoiding blockages to change, which is very simple to describe but very hard to do. They had discovered the benefits of listening to criticism. Unfortunately in many organisations the top management have created subtle not so subtle structures which make it almost impossible for bad news ever to get to the top. If the messenger always gets shot, then eventually the company will run out of messengers willing to take on the job of bringing the bad news to the chairman. The chairman then only hears good news and of course believes that all is going well. He neither appreciates that there is a need for change nor does his readiness for change alter in any significant way. It is a version of the story of the emperor's new clothes, and has been played out in countless organisations over the last few decades.

### **Risk-taking**

But setbacks and failures are of themselves a healthy part of change management. Thomas J. Watson, the founder of IBM, said the way to succeed is to double your failure rates. Not being afraid of failure is probably the key emotional strength that change managers need to have. Any fundamental change calls for doing things differently, and this means risk, and failure sometimes. The effective change manager is not put off by the failure. Indeed he/she learns from it. A study of ninety top leaders by Warren Bennis showed that while all of them recognised they had made mistakes, some of which were catastrophic, none of them regarded themselves as having failed completely. There was always something each of them could learn from any catastrophe. Positive failure and the strength to recover and move forward seem to be essential features of good change management.

### **Management of chaos**

Most of us have been brought up in an era where science has dominated. Science provides the logical analysis of data and the ability to predict outcomes for the future. In running a business, many of us have been led to believe that if only we could get sufficient data and apply the correct rules to that data, we would be able to predict the outcomes of our decisions. Sophisticated techniques have been created to help predict what will happen and to ensure decisions are made at the right time.

Project management is a science in itself and is quite well understood. Companies use budgets as planning tools and rolling five-year strategy programmes as ways of keeping track of their progress and ensuring that they are on course.

These techniques are very logical ones, and make the assumption of predictability. In recent years, however, a new facet of science has emerged - that of understanding chaos. Some systems, it appears now, are inherently unpredictable. No matter how much data you have, there will never be enough and it will never be detailed enough to predict how a system will operate. Examples abound in the natural world: the shape and development of clouds, the variations in leaves and snowflakes, the turbulence of smoke or of water going through rapids, to name a few. All these systems, all these shapes, mathematicians describe as fractals. The pattern appears similar, but it is impossible to predict precisely how the pattern will emerge. Weather systems fall into this category as well. They are frequently unpredictable in anything other than the very short-term special analyses from head office.

The more we move our organization into periods of fundamental change, the more we are managing chaos. Those of us who prefer the comfort of precise prediction either have to leave now or reject the old predictive way in favour of the new flexibility, which adapts to the new and the unexpected.

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## **19.11 SUMMARY**

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This unit has dealt with one of the most critical and important issues, i.e., technological changes and issues arising out of it. Change of technology demands change in attitude skills and mindset of both the blue and white collar in organisational set up. If not dealt with properly, this may create serious HRD problem. Change in technology necessitates retraining, redeployment, and reallocation of workers and the work. It is important for HRD managers to have deep understanding of HRD issues to properly cope with such developments and their fall out. Proactivity is another issue which plays significant role in taking up such challenges. The present unit deals with all the above issues.

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## **19.12 SELF ASSESSMENT QUESTIONS**

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- 1) Define HRD and explain its salient features.
- 2) Explain how to manage technological change in the organisation. Illustrate with certain examples.
- 3) Describe different steps involved in bringing change in the mindset in an organisation.

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## **19.13 FURTHER READINGS**

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