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# Work Improvement and Organizational Democracy<sup>1</sup>

### The Sanction of a Central Mandate

It is sometimes maintained that approval from the top is the critical requirement for the successful carrying out of a change program. But even when a central mandate is given, and this is usually hard to obtain, implementation does not automatically follow. The problem is then created of finding a suitable instrument to carry it out.

In Philips Electrical Industries, work-restructuring experiments rapidly convinced the Main Board of the desirability of spreading socio-technical change throughout the corporation. As early as 1965 the Chairman made public his commitment to the new principles so that there should be no doubt about the sanction carried by the central mandate. The Board itself could not carry out the changes. How were they to be accomplished?

The chosen instrument was the Technical Efficiency Organization (TEO), one of the main staff divisions. Responsibility for appreciating the human and social aspects of work organization was assigned to the group also responsible for the technical and efficiency aspects, causing a redefinition of mission in socio-technical terms. The TEO had to add psychological and social science competence to engineering and OR competence. The conflicts between these approaches were internal to the change agent, which had itself to develop the integrated

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capability required in the plants.

Being a staff division, the TEO could not impose its policies on operational management but had to act as an internal resource, supporting and evaluating projects undertaken by plants and disseminating the findings and experience throughout the concern. A process of organizational learning of the widest kind was thus set in motion. For example, in 1968 the TEO issued a major report called "Work-Restructuring for Unskilled Workers." This, with the sanction of the central mandate supporting it, had the effect of substantially increasing the number of work-restructuring projects being undertaken.

The Technical Efficiency Organization also undertook research studies of such projects when invited by the departments concerned. This can only take place when operating people have reached the point of wishing to increase their understanding of the complexities involved through systematic and sustained analysis. Too little of this type of evaluation is being undertaken by operating organizations. The TEO made available a wealth of evaluative case histories in which attention is paid to failures as well as to successes, so that there has been a great deal of learning from mistakes.

More than 50 projects of various dimensions are said to be under way. But the diffusion process has been slow, depending on the creation of an internal market for the new approach, which has to be thoroughly understood and wanted by those directly concerned or nothing much happens, even when central support is given.

## The Process of Cumulative Innovation

The opposite of central mandate is the accumulation of initiatives from below

until, eventually, a central mandate is given. Over the last seven years a process of this kind has been taking place in General Foods.

An innovative manager had designed a new plant on advanced socio-technical principles (similar to those used in Norsk Hydro) and brought it into successful operation with one or two key colleagues. A high level of work satisfaction was achieved, together with major cost savings. This plant, which was in Topeka, Kansas, received national and, indeed, international publicity.

Despite all this, several attempts to convert existing General Foods plants to more innovative forms of socio-technical organization lagged rather badly for some years. The Topeka model was rejected. Criticisms were many: it required special conditions; it was a greenfield site; there was no union contract in the way; employees were specially selected; etc. Other managers did not want their plants to be compared with Topeka. There was a great deal of envy. Evidence of Topeka's operational success was disregarded. These reactions encapsulated the innovation. Similar reactions have been observed in other organizations undertaking major change programs of this kind. High profile demonstration experiments are far from always effective as foci of diffusion in the organization in which they have taken place. Outsiders are often more receptive.

However, largely through the efforts of the original innovator, Lyman Ketchum (Ketchum and Trist, forthcoming), several small projects eventually persisted in various plants. Experience of these showed that before a change effort could make any serious headway, the plant manager and his staff had to "work through," and make explicit to themselves, the implicit assumptions on which traditional management and organization are based. This rather emotional

"unprogramming" ordeal had to be endured before socio-technical concepts could be learned and the new work ethic internalized. The process had to be repeated at supervisory levels and with the union.

From these experiences emerged what has become known as the Plant Managers' Network. This is composed of several plant managers, interested in carrying through local innovations, who meet informally off-site to compare experiences. This network has become a powerful medium for social learning.

In the last year or so, a program of considerable scope has developed in one of the largest divisions. Beginning with a small new equipment installation, it became plantwide in the largest location and has begun to spread to others. The leading edge of the change effort has, therefore, become divisional.

This development has made a fresh impact on top management at the corporate level where the interest aroused earlier had not survived the antagonism to Topeka. Hard evidence was now to hand that large, and often old, unionized plants could transform themselves and begin to internalize the new work ethic and in so doing improve their operations. The corporate vice-president for operations developed a document entitled "An Operations Philosophy for General Foods." This was sanctioned by the president, who had participated in the drafting, at a recent corporationwide conference of operations management where the document was discussed in detail.

The philosophy not only commits the corporation to socio-technical work design but also to principles such as maintaining labor stability. Operations managers are now testing out how far the marketing and financial sides will, in practice, honor this. A new dialogue has

opened.

## The Role of the Innovative Subsidiary

Intermediate between central mandate and cumulative innovation is a process in which a subsidiary or division of a large corporation undertakes the role of being an experimental site. This allows the implications of socio-technical change to be experienced at all levels of management except the very top and yet to be contained in one organizational space.

A process of this kind has taken place in the refining side of Shell in Britain, where four out of five refineries have been involved. In the early 1960s, severe problems of overmanning were experienced, together with difficult labor relations and increasing management frustration. The company decided to make an all out effort to bring about changes which would make possible a higher level of motivation and commitment to company objectives on the part of all employees, leading to an enhanced level of performance. The results have been publicly reported for the years 1956-70 (Hill, 1971; Hill and Emery, Vol. II, "Toward a New Philosophy of Management"). The fifth refinery was a joint enterprise with Imperial Chemical Industries (ICI). Shell did not want to expose or impose its internal experimental processes to or on its partner.

A small team was set up to study the company's long-standing motivation problem on a full-time basis and to propose long-term plans for solving it. A collaborative relationship was established between outside social science resource people from the Tavistock Institute and internal resource people from the company. One result was a considerable transfer of knowledge and skills into the organization.

A document was produced that stated explicitly the objectives the company would work toward and the management philosophy, or values, which would be used to guide decision making in pursuing them. Key features of the document were a reconciliation of the company's economic and social objectives and the adoption of the principle of joint optimization of the social and technical systems.

At a residential off-site conference, the top management of the company, led by the managing director, committed itself to the objectives and philosophy and to seeking commitment to them throughout the organization. The top management team met under similar circumstances at critical decision points in the program to decide and guide the general course it should take. In order to secure this wider commitment, a complete dissemination program was developed. Through numerous conferences at each location, large numbers of employees at all levels were able to test the objectives and philosophy for themselves. The remaining employees had an opportunity to do this at departmental meetings. Eventually all the employees in the company were included. The dissemination process was dynamic, not stereotyped. Different methods were tried out and each location developed programs that were best suited to its own refinery situation. The dissemination process achieved considerable success in securing a widespread understanding of, and commitment to, the company's objectives and philosophy. It also produced quite a number of highly enthusiastic employees. They represented the critical mass who led the process of implementation.

With few exceptions, trade union representatives, both internal shop stewards and outside officials, reacted very favorably to the company's intentions and offered their support. The dissemination program developed new skills in many people and created a climate in the

company that permitted and encouraged trying out new ideas. Although not all the experiments achieved their purpose, they contributed to the overall learning and development and provided a stepping-stone to the next move forward. An important example of this type of innovation was the setting up of joint management/union working parties whose new role and new frame of reference were accepted by the majority of the shop stewards and by all the trade union officials. Although they did not fully complete their tasks, the work they did made a valuable contribution to the productivity bargains that followed.

The outcome of the productivity bargaining, after the expenditure of much time and effort, was also very successful. More important than the content of the bargains, significant as that was, was the manner in which they were decided. Both management and union representatives were dedicated to the bargaining's success and shared to a greater extent than ever before the same frame of reference. The level of participation on the part of shop stewards in the formulation of the bargains and the level of effective communication with the shop-floor employees was exceptionally high. The result was commitment to the content and the spirit of the deals, not merely a collection of unenforceable agreements. A more general result of the new climate and the new collaborative working relationships between shop stewards and management was a vast improvement in the industrial relations situation at Shell Haven, where they had been exceedingly bad. General morale improved accordingly.

The other major field where innovation took place was in the design of jobs. Here again, partial success in one venture did not stop progress but led to the start of another. The process was again dynamic. The pilot projects at Stanlow Refinery created great opportunities for learning and indicated good possibilities for improvement in performance levels. The

introduction of two simplified methods of analyzing existing systems provided another great learning experience in which many people in the company were involved. The application of the methods at Stanlow showed good and promising results. As with the earlier pilot projects, they demonstrated how shop-floor employees could contribute significantly to these results. The nine-step method of socio-technical analysis was also found valuable, both as a training tool and in its practical application.

The largest-scale application of the philosophy was in the design of the social system at Teesport, the new highly automated refinery. The principle of joint optimization of social and technical systems was consciously and carefully applied, with highly successful results. A wide variety of other implementation measures were all undertaken within the framework of the philosophy. They included changes in the staff appraisal system and in manpower planning, job enrichment and so on.

The development program was subjected to many countervailing pressures, some internal (such as the retirement or transfer of key people, both in management and among the resource people) and others external (such as the disruption of crude supplies by war and the pressures felt at the Teesport refinery to regress to old norms).

The countervailing forces mentioned above have arrested the progress of the program in Shell (UK). Indeed, a regression is apparent if the early 1970s are compared with the late 1960s, despite the enormous effort made initially. The sustaining of innovation over long time periods is a problem requiring further study.

The United Kingdom initiative has been taken up and developed further in Australia by one of the British refinery managers who went out there. Recently, a major program



has been put under way in Holland outside the refining field. Members of the Group Board have been kept informed of what has been transpiring from the beginning of the British project. They have never interfered but have not felt that the process has reached a point where active Group policies were indicated.

## The Function of Local Experimentation

The difficulty of effectively obtaining top management commitment in very large organizations has been demonstrated in the accounts that have been presented. Fortunately, a number of cases demonstrate that significant changes can take place on a small scale here and there at the departmental level. They are often spontaneous and unofficial. They do not attract undue attention, which is their protection.

A remarkable case of this kind has been reported from Corning Glass. One or two innovators in the R&D department of one plant began to introduce experimental socio-technical change with the assistance of behavioral scientists. Other departments tried out changes for themselves. There was no pressure.

There is some reason to expect that local experimentation will become more common. The search for a new work ethic and for organizational values and forms that will embody it, is, in the last analysis, a response in the wider society to profound changes taking place within it. Many more people were likely during the mid and late 1970s to pick up the relevant signals from the environment than during the late 1960s and early 1970s--and to act on them. The pioneer projects have shown the way and some of the larger socio-technical change efforts have received a great deal of publicity, as has the alienation phenomenon. What appears

to be happening in a number of organizations is the appearance, simultaneously or in close succession, of multiple small change efforts in several different places. The burdensome processes of securing sanction from the top are not undertaken. The managers concerned simply become proactive, assuming that to make the required changes is within their discretion--and union locals do not always inform their higher echelons. This way of proceeding is becoming more possible as the new ethic becomes more familiar. The number of these small endeavors is not only increasing but networks which connect them are beginning to form between as well as within firms. They may also be rendered futile by absence of top support.

## The Professional Organization as Change Agent

In Japanese industry in the last 10 years, a grassroots movement has arisen involving a new philosophy of work with special reference to improving product quality by increasing worker involvement, participation in decision making at the shop-floor level and encouraging personal development. This movement represents a dramatic break with the traditional paternalistic culture of the Japanese factory and the Taylorism that the society had imported into this.

Sony has been a leading exponent of the new philosophy and attributes a significant role to it in the firm's remarkable growth, particularly with reference to the ability of their work force to cope with the rapid technological change in their products.

A societal change which may be linked to the movement is that status in terms of age, so fundamental in Japan, is being diminished, though the process is no more than in its first very early phase. The older and the younger generations are nevertheless beginning to merge, at

least in the workplace, into a kind of senior/junior, teacher/pupil relationship, performing closely associated jobs in which they assume joint responsibility.

This relationship also extends to the scientist-technician and to people with differing backgrounds and academic disciplines who are brought together to solve problems across technical, business, financial and political boundaries. In these respects Japanese social structure in the work setting is beginning to develop into a series of collective partnerships, involving deep relationships and effective teamwork, supported by free-flowing information, responsible judgment and a good deal of youthful zeal. Where will this lead the society as a whole with its complex and long-evolved culture?

Of special interest is the mechanism of the teamwork, which is carried out through what the Japanese call Quality Control Circles (QCC). These Circles can best be described as groups of workers and foremen who voluntarily meet together to solve shop-oriented production/quality problems. They aim at improving daily work and human relations through the "mutual development of the participants." The foreman is usually, but not always, the leader.

The first Circles were entirely spontaneous. Their importance, however, was recognized by a critically relevant national professional association--the Japanese Union of Scientists and Engineers (JUSE). Members of this organization began to nourish the Circles in various workplaces. It soon became JUSE's official policy to give them technical assistance and as more Circles began to form they were registered with JUSE. In this way, a national network was built up which was independent of any particular firm, yet which had great power of organizational entry.

Since June 1962, when the first three Circles were officially registered with JUSE,

the QCC movement has had a fantastic rate of growth. The members of the Fourth QCC Team, who toured the United States in September 1970, reported that there were over 400,000 Circles, with over 4,000,000 workers. Since then numbers have grown to more than 500,000 and 5,000,000 respectively. A Circle may have as few as three or as many as 20 members but generally has between 5 and 10 members. Once a Circle is registered with JUSE, it becomes part of the national organization.

Cost savings range from as little as \$250 to a high of \$500,000 per case per year; savings of \$100,000 are frequent and the average runs about \$56,000. While 32 percent of the QCC meetings take place during working hours and 44 percent afterward, 24 percent meet under both conditions. When meetings take place after working hours, compensation is offered in 71 percent of cases. While 35 percent of Circles meet once a month, 65 percent meet more often; 80 percent of the meetings are for an hour or more; 35 percent for two hours or more.

Of 1,566 companies surveyed by JUSE, 1,424 (91 percent) were using QCCs. The industries covered included chemicals, electrical, textile, general machinery, wood products and consumer products. Japanese writings on the subject lay stress on a philosophy of happiness and creativeness in work. In fact, features of what we have called the new work ethic are emerging against a very different cultural background.

A prominent feature of Circle activities is the extent to which they are concerned with teaching workers the technical skills of industrial engineering, quality control, etc. That is to say, the professionals have ceased to hoard the knowledge which is their power. They are sharing it. This is a process of work-linked democracy which has no parallel in the West.

## Autonomy, Personal Growth and Participation

The projects reviewed indicate that types of organization structure, management methods and job content can be developed that lead to cooperation, commitment, learning and growth, ability to change, high work satisfaction and improved performance. When responsible autonomy, adaptability, variety and participation are present, they lead to learning and behavior that improve the organization and enhance the quality of working life for the individual.

Autonomy means that the content, structure and organization of jobs is such that individuals or groups performing those jobs can plan, regulate and control their own work worlds. Autonomy implies a number of things, among which are the need for multiple skills within the individual or with a group organized so that it can shape an array of tasks; and self-regulation and self-organization, which are radical notions in conventional industrial organizations. Under the principle of self-regulation, only the critical interventions, desired outcomes and organizational maintenance requirements need to be specified by those managing, leaving the remainder to those doing. Specifically, situations are provided in which individuals or groups accept responsibility for the cycle of activities required to complete the product or service. They establish the rate, quantity and quality of output. They organize the content and structure of their jobs, evaluate their own performance, participate in setting goals and adjust conditions in response to work-system variability.

Research indicates that when the attributes and characteristics of jobs are such that the individual or group becomes largely autonomous in the working situation, then meaningfulness, satisfaction and learning increase significantly, as do wide knowledge of processes, identification with the product, commitment to desired action and responsibility for

outcomes. These findings support the development of a job structure that permits social interaction among jobholders and communication with peers and supervisors, particularly when continuity of operation is required. Simultaneously, high performance in quantity and quality of product or service outcomes is achieved. This has been demonstrated in widely different settings.

The content of jobs has to be such that individuals can learn from what is going on around them and can grow, develop and adjust. Relevant here is the psychological concept of self-actualization or personal growth, which appears to be central to the development of motivation and commitment through satisfaction of the higher-order intrinsic needs of individuals. The most potent way of satisfying intrinsic needs may well be through job design. Too often, jobs in conventional industrial organizations have simply required people to adapt to restricted, fractionated activities, overlooking their enormous capacity to learn and adapt to complexity. Such jobs tend also to ignore the organization's need for its workers to adapt. In sophisticated technological settings, the very role of individuals is dependent on their adaptability and commitment. With no one around at a specific instant to tell them what to do, they must respond to the situation and act as needed. The job is also a setting in which psychological and social growth of the individual should take place. Blocked growth leads to distortions, with heavy costs for the individual, the organization and the society. Where the socio-technical system is designed so that the necessary adaptive behavior is facilitated, positive results in economic performance and personal satisfaction have occurred at all levels in organizations.

It surely has always been known, but only lately has it been demonstrated, that part of what a living organism requires to function effectively is a variety of experiences. If

people are to be alert and responsive to their working environments, they need variety in the work situation. Routine and repetitious tasks tend to dissipate the individuals. They are there physically, but not in any other way.

Another aspect of the need for variety is less well recognized in the industrial setting today but will become increasingly important in the emergent sophisticated technological environment. Cyberneticist W.R. Ashby (1960) has described this aspect of variety as a general criterion for intelligent behavior of any kind. To Ashby, adequate adaptation is possible only if an organism already has a stored set of responses of the requisite variety. This implies that in the work situation, where unexpected things can happen, the task content of a job and the training for that job should match this potential variability.

Participation of the individual in the decisions affecting his work, in development of job content and organizational relations and in planning of changes is fundamental. Participation plays a role in learning and growth and permits those affected by changes in their roles and environments to develop assessments of the effects.

## Implications

The new work ethic has implications for leaders of business and industry, unions and government, some of which will not be easily accommodated, for they require fundamental rethinking of the roles of people in organizations and concomitant modification in organizational form, management, labor contracts and government regulations.

Some of the conclusions are directly contrary to cherished beliefs held at all levels of our society. Widely held beliefs cannot be undermined rapidly--a reason for the slow progress

to date. The most significant conclusions and implications can be stated as follows:

- Productivity or efficiency versus the quality of working life is in itself an inappropriate concept. Productivity and quality are not opposite ends of a continuum, but are on two different scales. Enhancing one does not necessarily diminish the other. Under appropriate organizational structure and job design, experience shows that the two are directly related, i.e., both increase together.
- Coercive regulation and control by management begets more coercion. Planning and measuring to achieve and maintain coercive or repressive regulation and control of an organization's members trap both management and unions. They are forced into dead-end situations, with no options for developing suitable social or technical organizations. Urgently required are new ways of measuring outcomes where the social system and its members are considered as resources as much as the technical system and its parts are now. At national as well as company level, the incompleteness of economic theory and supportive accounting systems relegates these concerns to externalities, removing them from organization design and the management decision process. This effect has inhibited considerations of the quality of life.
- Regarding flexibility of technology, the indications are that the opposite of technological determinism is the reality. Results of socio-technical design of



factories with sophisticated technology indicate that there is more than enough flexibility on the technological side to suit social system requirements for a high quality of working life. Of course, there are limitations, but the full constraints are not known because almost everywhere engineers are asked to look at and design the technical system independently of any other considerations.

- Self-regulation and control at the workplace through autonomous or semiautonomous jobs and groups yield high levels of satisfaction, self-development and learning and high performance in output and quality. They form the basis for further organizational design to reduce the repressive and coercive character of organizations and resulting worker alienation.
- In all instances where substantial enhancement of the quality of work life has taken place, it was preceded by a rethinking of management ideology about how organizations and individuals work. The ideology of the first industrial revolution regarded man as unreliable, unmotivated and responding only to economic inducements. Men were spare parts in organizations and society. This ideology has had to be reassessed and changed. Though spurred on by the requirements of the second industrial revolution, this reassessment is a slow process and a large undertaking.

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