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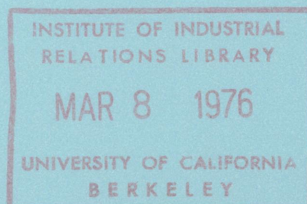
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A systems approach to determining the criteria for successful change in the context of a particular action research programme

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**Manchester Business School
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A SYSTEMS APPROACH TO DETERMINING THE CRITERIA FOR
SUCCESSFUL CHANGE IN THE CONTEXT OF A PARTICULAR
ACTION RESEARCH PROGRAMME

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PROGRAMME

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T. Lupton and A. Warmington

(Paper presented to a Seminar on Evaluating Organisational Change Programmes, held by the European Institute Institute for Advanced Studies in Management, London, January 1973).

This paper discusses some developments in thinking arising from involvement in a programme of attempted organisational change through action research in a large U.K. manufacturing company. We want particularly to examine some ideas which have evolved about the criteria which ought to be used in determining the direction of the change process, and in judging the success of a change strategy in a defined area of a company. But first we should perhaps describe briefly the nature of the programme and of our involvement with it.*

1.

This is a programme of organisational change which was initiated in late 1969 after much discussion within the company, and outside. Its declared aim was originally: "To increase the productivity of the company..... in order to achieve the most economical utilisation of its resources to enable it to improve its competitive position, and to use the benefits achieved for the good of the company, its employees and customers".

* We must acknowledge the help we have received in preparing this paper from colleagues in the Organisational Design Research Unit at M.B.S. and especially Cecily Gorfin and John Donaldson. We should also like to pay tribute to the very fruitful academic/management relationship which has developed in the course of the programme with the company's implementation team.

Any brief outline of the methods used must be an over-simplification. Nevertheless, it is possible to differentiate between, on the one hand, the general principles which were advocated for the programme at the beginning, and which gradually became accepted by the company and its implementation team; and on the other hand modifications to the methods which have been made by the members of the change programme on the basis of experience and as our knowledge of the nature of organisational change has increased. It is really only possible here to touch on the first.

The basic principles had three aspects. Firstly, the establishment of a multi-disciplined team of company managers, coming from areas such as production, engineering, management services, personnel and marketing, and working with a research fellow from the university, (1) with Tom Lupton acting as chief consultant. Secondly, an assumption that improvement in performance could only take place if a programme of change were based on the specific needs of particular operating areas of the organisation, and if it involved the people working in the area who best knew its problems. Thirdly, an open systems approach to organisational problems, which would involve looking at an area of the company in great detail using a well-disciplined systems framework and examining it in relation to its product market, its resource market, its technology and its social setting, and also involving the use of socio-technical concepts and techniques in investigation.

We hoped that a number of things would follow from this procedure. If the multi-disciplined team could be formed into a cohesive group of highly motivated people engaged in a systems investigation of a particular area, they might be helped to reach a new and deeper understanding of the area and also to develop a new way of looking at systems in general. From this they might begin to examine some of the implications for company performance, and become advocates for change of the kind which investigation showed the organisation to need. So a small cell of able people from different areas of the Company would have been created, who would be thinking rather differently about Company problems, and who might

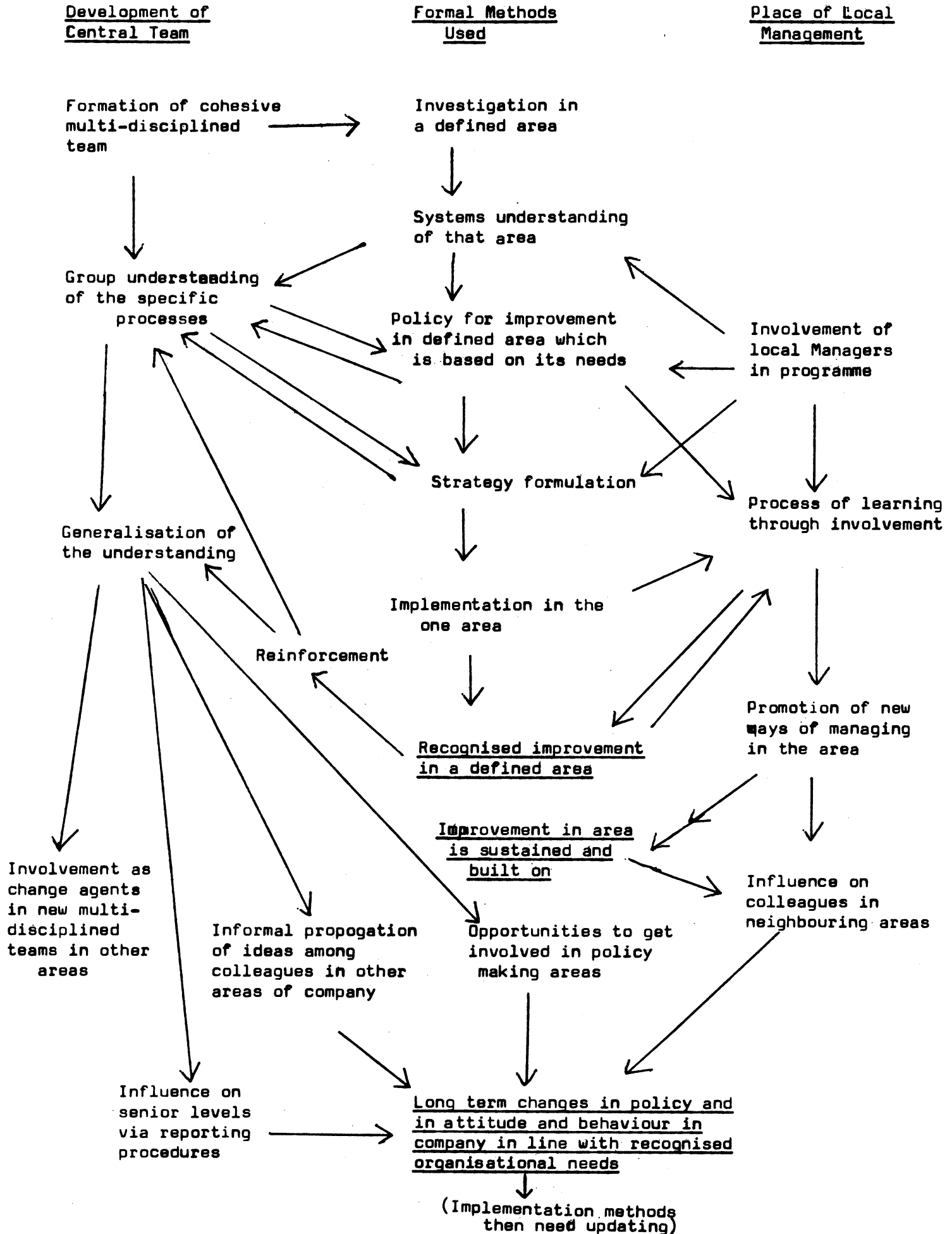
1. Since 1970 there have been two research fellows from the School working with this team. The other is Cecily Gorfin, whose paper on the use of socio-technical system concepts to the last Behavioural Science Seminar in Brussels was based on some of her work on the programme.

begin to act as a kind of leaven working within the company to begin to change its culture to modify methods of policy formation, or attitudes to authority and areas of responsibility. If they could be kept together as a group they could work effectively at this process of change: possibly directly, by propaganda and persuasion, by being given an opportunity to comment critically on policy or be involved in its formation and revision; possibly indirectly, through the formation of further investigation teams, within each of which a member of the original team might act as a more experienced change agent, and each of these teams in turn creating further groups of future cultural change agents.

Further, the investigation in one defined area of the company would lead to proposals for that one area, designed to make the operation of that area better. There would be a specific strategy for change within the one area, as distinct from a general start in freeing attitudes and modifying policies. This would have an immediate effect. If successful, performance would improve, interest in and approval for the programme would be stimulated and the team would receive some reinforcement, some confirmation of the rightness of the approach and a sense of approval from their superiors. More important, if managers working in the area could be involved in building up a new and detailed picture of the way their own area was working, and particularly if they could be involved in the process of strategy formulation and the implementation of change, then a quite effective programme of management education would have been achieved. These managers would be more highly motivated to make a success of the programme of improvement in which they had been involved, but also they would be likely to continue to make use of the new understanding when they were solving other problems. Moreover, in so far as the change programme encouraged new relationships (both within the area, and between that and other areas) changed forms of responsibility and different attitudes to authority, so further beginnings would have been made in the wider cultural change process. Greater adaptability and the potential for continued improvement might have been created in and around the one area of the Company.

So the programme can be seen as having both defined, narrower aims and wider, more diverse and generalised aims of change in attitudes and in

Sketch of the Original Implementation Plan for
Change Programme



the structure of power and authority, and the process of policy making in general. Some of these objectives, and the mechanisms by which it was thought they might be promoted, are summarised in the diagram.

The history of the last three years has been interesting, and although experience has confirmed the soundness of these basic principles, a great deal has also been learned about the workings of the mechanisms which exist in any successful organisation to resist change. It would not be appropriate to go into this history in this paper, but it is relevant to mention just one of the many difficulties which the programme has met.

In most industrial organisations, line managers are accustomed to measuring performance, and therefore improvements, in fairly clear, precise objective terms. They are accustomed to working to fairly short time scales, and most innovations must prove themselves after a fairly limited trial period. The kind of improvements usually encountered include such things as technical (process) innovations, new techniques in quality control, new manning arrangements or principles of work allocation, new methods of payment or campaigns to reduce materials wastage, warehousing costs or machine downtime. Generally only one problem is identified at a time, and efforts are concentrated on those improvements which will reduce variable costs or raise efficiencies in the one area. A "target" or "goal" may be set, and success is achieved, and recognition given, when the goal is reached.

The other characteristics of these programmes are that little attempt is made to build upon the achievement by generating from it, and that often the effects (adverse or beneficial) on wider aspects of organisational performance are ignored as irrelevant, at least by those who do the measurement and give the recognition.

These are the expectations held by many managers, about the nature of programmes of improvement, and they are particularly difficult to deal with. A change programme based on systems understanding of the organisation, on analysis of the way variables interact with each other, on a long-term

strategic approach to change, can but rarely show results in only a few months, and it must measure success in quite different ways.

Thus, so long as these expectations persist, they put severe constraints on the programme's ability to achieve long-term improvement, and particularly to achieve changes in relationships and attitudes; and they place severe pressure on change agents who are already in a situation of some stress and wish themselves to demonstrate success and gain recognition. These difficulties, and the mechanisms devised by the company managers working on our programme to overcome them, are again subjects which must be dealt with in another paper.

However, the existence of these expectations was a considerable inducement to the programme to devise a satisfactory measure of performance for itself by which the success of a change strategy could be evaluated in some apparently objective form, compatible with the concepts on which the programme was founded. So long as we insisted that success on the programme could not be measured by orthodox rather short-term indices, we were forced to define what does constitute success. This had to be done not only to satisfy the managers on whose goodwill the programme is dependent, and not only to provide implementation teams with something by which they can measure their own performance, but also as a basis for the programme as a whole, to allow us to determine the direction in which it was appropriate to induce the organisation to move. How to define success is what we now want to discuss.

2.

If one looks through the literature of planned organisational change, one finds surprisingly little attention being paid to a precise definition of the aims of a change programme. Most writers seem to assume that there is a specific objective which the client organisation wishes to attain - frequently the smooth introduction of some technical or structural innovation - and that the function of the behavioural scientist-consultant is to enable that particular objective to be achieved with the fewest

possible adverse complications. Or it is assumed that change is inevitable in present-day society and the only function of the consultant is to make the organisation more responsive to economic, technical and social changes which it is inevitably meeting. In our particular case neither of these assumptions was really relevant and, as has been stated, our brief was to increase "productivity" (whatever that may mean).

The better known Behavioural Scientists are also rather reticent about the nature of the improvement coming from new relationships, changed styles of management, or new forms of organisation. Rensis Likert is perhaps the most explicit and gives the most careful treatment. Much of his writing concerns high producing groups and high producing managers, and in several passages he writes of an efficient organisation as one with high productivity, low costs and low turnover and absence of labour, together with high motivation and satisfaction among members of the organisation. He does not go very far in analysing the relationships existing between these dimensions, nor, despite his discussion of intervening variables, does he ever explain how precisely they are affected by such things as management style or methods of decision making or control.

Argyris also states fairly clearly his conception of an improved organisation. What he appears to be seeking is a creative, innovative organisation in which healthy individuals can gain high motivation and self-actualisation by working in line with the objectives of the organisation. For this, changes are needed both in individuals (especially in increasing interpersonal skills) and in the organisation (in terms of authority and methods of control). Although Argyris seems to dislike rational organisations in the sense of organisations which control and constrain individuals' behaviour in line with detailed goals, he does not apparently criticise the organisational objectives themselves. The objectives are apparently the usual ones of high technical efficiency, productivity and profitability, but the means of attaining these must be such as to satisfy human and social needs.

This view would probably have been shared by McGregor and certainly by Herzberg, who writes at some length about mental health. My difficulty about these views as about those of Likert, is a logical one. One can share wholeheartedly the desire for industry to pay greater attention

to human and social values, to the dignity and fulfilment of people in industry; one can see the advantages to everyone of high motivation; but it is very difficult to find in behavioural science texts a reasoned argument about the effects of all this on overall performance in specific technical and market settings. How, for instance can the directors of a steel mill, a heavy engineering works or a textile firm set about the detailed process of creating conditions to increase social and individual satisfaction while managing to live with the technological and environmental constraints which determine technical efficiency and market satisfaction? A leap is made over the whole vexed question of how to measure overall organisational performance, for it cannot be assumed that so long as attitudes are more favourable, job satisfaction increased, rates of absence and separation improved, then the organisation is necessarily performing better. We are back again with the problem of specific, unidimensional improvements, which tend to ignore the complex, interactive nature of the whole organisation. We still need to search for a satisfactory definition of performance.

To turn from these psychologically oriented advocates of change to sociological studies gives little more assistance. In fact sociologists tend on the whole to concentrate on explanation and to be uninterested in criteria of performance or in the nature of improvement. Among those who do by implication state some criteria, there are Trist and the other Tavistock Institute researchers who originally formulated the concept of the socio-technical system. They seem to compare situations largely on the basis of rates of absence, labour turnover and labour productivity, lack of aggression and the quality of the social organisation including the amount of co-operation between groups. These again are only a few of the possible indicators of performance.

None of these attempts to define success is based on systems concepts or 'best fit' ideas nor have they been developed with any degree of sophistication. I should like however to mention two exceptions. The first, (which makes life a little difficult) is Tom Burns' well known statement, following on March and Simon's analysis of individual and group objectives, about the plurality of values and objectives in any social system. Burns points out that the rationality model of an organisation defines the objectives which are held by those who direct the

organisation with rational assumptions in mind, but that it takes no account of the fact that there are many other players in the organisation (individuals and groups) who do not share these objectives and who behave accordingly. Burns, however, while stating the problem does not resolve it. Indeed, he may have intended to imply that the multiplicity of objectives in an organisation is so great that no social scientist without taking a particular stand-point can necessarily define one situation as being an improvement on another.(1)

The second exception is in the later writings of Lawrence and Lorsch, who suggest that what is needed from change is the development of the organisation, which can only take place if the change results in a better fit between the organisation and the demands of its environment or in a better fit between the organisation and the needs of individual contributors to it, or both. So if the organisation is making more efficient transactions with its environment and if at the same time people within the organisation are better satisfied and better able to contribute to its efficiency, then, these writers suggest, the organisation is in an improved situation.

I think that these are the right dimensions, and that Lawrence and Lorsch are right to suggest both are relevant. A measure of the efficacy of an organisation's transactions with its environment is a good definition of performance in systems terms, where rational objectives are concerned. But the implications of the plurality concept are that rational organisational objectives are not necessarily the primary ones. There is a dilemma which Lawrence and Lorsch do not discuss, and that is how to balance any conflict there may be between the rational measure of organisational performance and its ability to satisfy the various needs of individuals and groups within it. Despite assumptions which seem fairly frequently to be made, it is by no means certain that individual satisfaction and high organisational performance are necessarily positively correlated in given real-world situations and there is little discussion about how the satisfaction of the needs of one group affects the satisfaction of other groups. So one has to have a stand point, and it is probably preferable that this stand point be made explicit from the start.

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1. Gross, in an article in B.J.S. 1970 resolves this dilemma in another way, but one which I believe begs the question; since he assumes that though people have personal needs from the organisation, and also goals for the organisation as each of them perceives it, neither of these is valid as the actual goal of the (reified) organisation which can be discovered by an examination of its present activities.

Now, this paper arises out of a programme of action research in industry, and in the course of this research some dilemmas have become apparent. The process of action research, where it includes an element of consultancy, is not entirely an exercise in the advancement of positive scientific knowledge. It will necessarily involve not only analysis and explanation of what is happening, but trying to predict what will be the effect of future courses of action, making some judgement between various alternatives and eventually recommending, or being involved in decision making. A problem arises immediately one moves away from explanation. In predicting and reporting on likely consequences of a decision, a selection process has already taken place: assumptions have been made about what are the significant consequences to be considered. I believe that this is not merely a matter of taking technical decisions about relevance (e.g. what should be included in the model, given the theoretical framework being adopted) but that it also brings into play a particular set of ethical values. A report on the likely consequences of a decision, then, will necessarily be based both on a theoretical model which provides criteria about the relevance of different variables and on a moral or ideological framework of views about the purpose of the organisation: about what ought to be taken into account. Further, when one makes recommendations, or when one becomes committed to a particular course of action, one has made further decisions about the ordering of importance of different variables and about criteria of performance which it is appropriate to adopt.

The dilemma of the scientist is that it seems impossible in this situation to rely on criteria based on scientific objectivity. It is impossible without making some fairly far-reaching value judgements - consciously or unconsciously - to hold as a matter of principle that one set of assumptions, or one measure of performance, must necessarily be more objective or more satisfactory than another. And yet one has to take a stand and formulate some criteria. All one can hope to do is to attempt to make the implications of the criteria as explicit as possible both to oneself and to the outside world.

We have in fact chosen to use a measure of performance approximating to the first criterion which Lawrence and Lorsch suggest: namely the performance of the 'system' in satisfying its environment. In this, we

were influenced by the open systems view which had inspired the programme and which was the basis of our team's work. We were probably also influenced by the need to satisfy the expectations present in the company, particularly among senior managers, to have some apparently objective, quantifiable, measure of organisational improvement. Now a contingency approach to evaluation certainly appears to be more satisfactory than the rather crude and simple criteria which accountants, industrial engineers, perhaps corporate strategists and some behavioural scientists appear to use, but it in no way relieves us of the need to recognise its partiality. It is true that the organisation's ability to satisfy environmental needs is very important: if performance is not high enough, the organisation is in danger of ceasing to exist, and thereby ceasing to satisfy any of the needs of its members. Moreover, systems analysis forces us to consider the values held by individuals and groups comprising the organisation, the relationships existing between them and the satisfactions and dissatisfactions which exist; and although we use this information wholly with reference to its effect on rational organisational performance, still there is some likelihood that measures of improvement instituted as a result of systems analysis will not grossly interfere with existing interests of those contributing to the organisation, or the values which they now find in the system.

However, we find it difficult to sustain the view that maximum performance of the organisation in this sense is the objective with which as social scientists we should be concerned. It is a valid objective, but it is incomplete in itself and must be set in the context of many other objectives. Indeed very high performance in this rational sense may not be of supreme importance: organisations exist for people, including all the people who are members of the organisation, the community in which the organisation is set, as well as for the markets and other parts of the environment, the owners of its physical assets and the whole economy. One cannot easily maximise the benefit to all these simultaneously.

What we have said in the last few paragraphs may in one way constitute a temporary defeat for the systems approach. In effect, for the purpose of this paper, and contrary to systems principles, we shall abstract from

many of the important and complex aspects of organisational success, (notably the needs of individuals and groups) and concentrate on one important, but a bit less complex aspect of it, and simply to bear in mind that these other aspects exist. In the long run, of course, our dilemma is probably amenable to resolution, but even then the solution in a given case will only be found if, by means of a systems model of a situation, one is able to establish a basis of knowledge which makes the dilemma clear and which enables the researcher to spell out all the implications of alternative states of the system. But a good deal more work is required before all the difficulties of that approach are resolved.

3.

Before we start to outline the method we have evolved, there is a preliminary point to be made: that there were many changes attributable to the programme for which the method was not relevant. For instance, so far as a change programme succeeds either in improving management skill in general or in changing attitudes at many levels in the organisation, no practical attempt can be made to measure precisely the improvement in performance: one can measure attitude change, but it is virtually impossible to identify exactly what consequent improvements in performance are attributable to these changes in attitude or style, and what to other environmental or structural changes which are occurring. Further, the effects of broad changes in attitude and behaviour will spread over the whole organisation in a rather unpredictable way, and will not be confined to any well defined area. So measures of attitude change or of changes in style or behaviour are rather imprecise if they are to be used as indirect indicators of success in a particular area of implementation. The criteria which we want to develop here have a much more specific application, related to specific areas of implementation, to determining the nature of the appropriate change process in one area, and to measuring the success of specific strategies of change which arise directly from work in an implementation site.

In fact, the concepts are a part of a larger system of ideas we have developed which comprehend the formulation of a strategy of change in a given area and a way of implementing and monitoring the strategy. Although their significance can be seen better in relation to the whole complex process of strategy formulation, we hope nevertheless that they do stand fairly clearly by themselves.

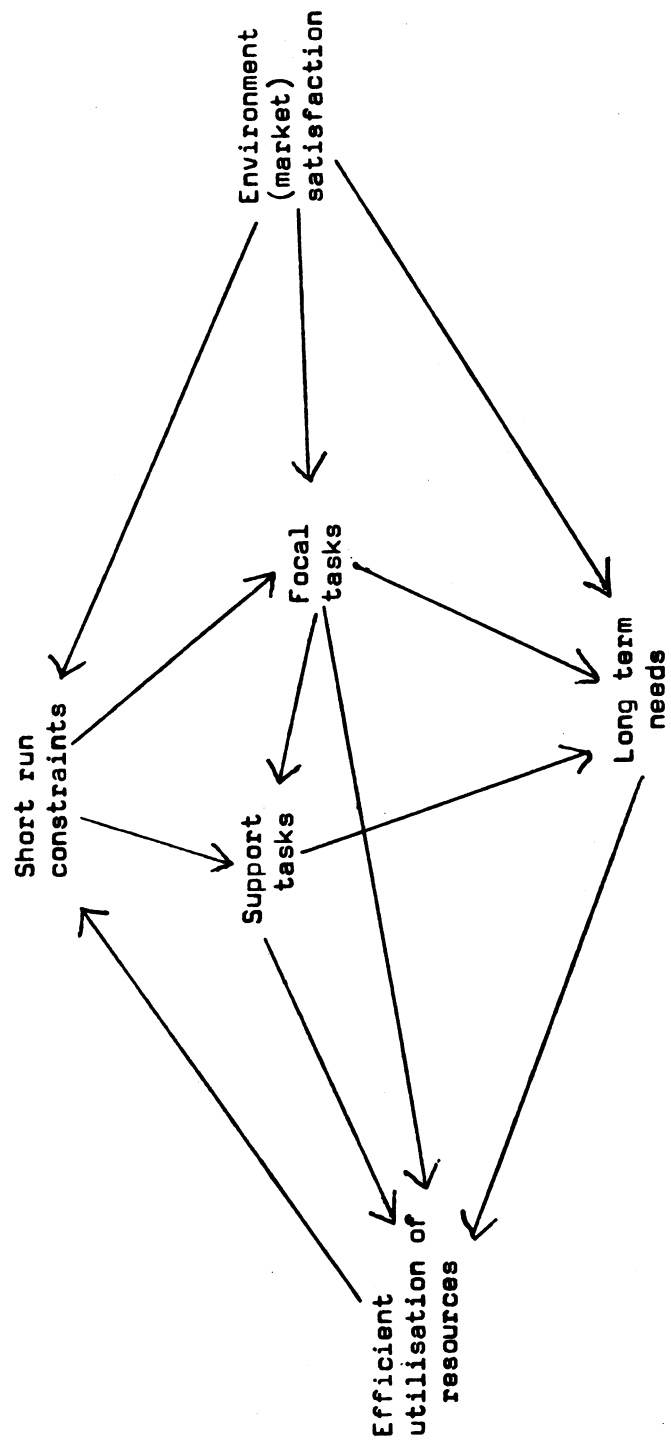
Let us begin by examining the characteristics of orthodox programmes of improvement, which we have implied were inappropriate to the programme. We said that they tend to be objectively measureable over a fairly short time span. Not only this, but they are on the whole uni-dimensional and deal with one problem at a time. Thus the aim may be to increase output per man, to reduce the turnover of labour, to reduce the number of rejects or the amount of machine down-time. Rarely is the question asked what effects elsewhere in the production system would be produced if the aim were achieved. Obviously, a criterion of improvement based on systems concepts would not share these characteristics. Better overall performance of the organisation means defining and obtaining a better fit of organisational characteristics to the environment as a whole, more effectiveness in meeting the demands of the various resource and product markets. Pursuit of a single goal may reduce the possibility of this.

Orthodox approaches, then, tend to set an objective at the start and examine in detail various means of attaining that objective, the relative efficiency of each and the technical economic behavioural and other constraints on each, until finally what appears to be the most efficient means of reaching the objective is found. That means is then pursued, and the results monitored, the monitoring process being designed to measure progress towards the defined goal, and that only. In our approach we have almost to reverse this process. We have to say that an improved situation must arise out of and be constrained by the way the system works at present, and also that it must be dependent on what happens during the change process itself. So to begin with it is impossible to set any specific objective in the orthodox sense of that word.

In fact one can say hardly anything until a fairly detailed analysis has been made of the way the organisation is working at present, how costs

are made up, how well the market is satisfied, what are the characteristics of the various control systems, what conflicts they create and how these are resolved, what socio-technical systems exist in the organisation and how they influence behaviour, what parts of the environment most influence it, and so on. A systems understanding of the organisation in this sense allows us to do two things: to define an area or a number of fairly extensive areas within which performance can be said to be potentially better than present performance; and to begin to examine what effects would be caused by changes of different kinds made to the system. One can in the first place form some good idea of the region or regions which would constitute improvements over the present situation if they were attainable. But what precise and within one of these regions an organisation should aim at cannot be established by a static analysis, but only by analysing the interactions which are likely to occur during the process of change, and by looking at a number of alternative strategies for change, using some clearly defined decision criteria to determine the choice of strategy. Then the possible changes should be monitored as they are introduced and the strategy should be adapted to the information being received in the monitoring process. Not only the strategy but the specific goal itself is likely to change as the strategy develops and better understanding of the dynamics of the system is achieved through the monitoring process.

Let us look at this in more detail. Having analysed the working of the system, it is necessary to define more precisely what would be the nature of an improved situation. Systems analysis in itself yields no information on performance. It is concerned mainly to describe and explain what is happening in the system. There are no criteria of better or worse implicit in its analysis. However, it is possible to establish criteria for success by the introduction of a few other fairly simple concepts. The first of these is the identification of what Miller and Rice have called the "primary tasks" or the focal activities of the system: what essentially the organisation has to do to satisfy its environmental needs. If the focal tasks of the system are properly defined in relation to the needs it is there to serve (it being recognised that these needs are subject to change over time) then the criteria of environmental satisfaction can be chosen with some confidence. We are concerned to define what, in relation to the market and to other parts of



THE DIMENSIONS OF ORGANISATIONAL
PERFORMANCE

the environment, the system is essentially there to do, and what are the conditions which permit it to pursue these activities most effectively over the long term. These conditions will include the performance of certain support tasks: that is tasks and activities whose function is to permit the focal activities to be pursued effectively and to be sustained and developed over time.

The second concept is that of cost, in the economist's sense of the most efficient combination of resources to produce a given physical output, or, perhaps better, the most efficient combination of resources which will allow the essential activities to be undertaken and production to be assured over the long term. In systems terms we are defining efficiency of the transformation process within the system boundary. Efficiency in the transformation process involves not only minimum costs, in the sense of the smallest ratio of resources to product, but also the right balance between those resources devoted to focal activities and those to support activities: these must be combined so that the interests of each are subjected to the sustained satisfaction of environmental needs (e.g. market satisfactions).

This schema is illustrated in the diagram. Within it there lie the roots of three different oppositions or polarisations, all of which have to be recognised and satisfactorily dealt with in any assessment of performance. Firstly, there is an opposition between cost criteria and satisfaction of environmental needs. We must aim at maximum efficiency in the use of resources, but only to the extent that this is compatible with our main objective, which is to obtain and sustain over time the best fit between the organisation and the relevant parts of its environment. As most managers are very well aware, these two may well be in apparent conflict. Pressure for immediate cost reduction can lead to a reduction in the system's ability to satisfy the market, and to develop satisfactorily in future. Conversely, it can often happen that better market satisfaction and consequent growth and development of the organisation is likely to entail rather higher immediate costs, and thus apparently to be opposed to the efficiency criterion. A judgement may have to be made between them, and the force of each will have to be recognised in the context of that system at the present time. The extent to which costs must act as a constraint to rapid development and

progress should appear as a consequence of our study of the system in its environment.

The second opposition is that between the resources which can be devoted to the focal activities and those needed by support activities. The focal activities are those on which the efficiency of the organisation depends, and we seek to maximise the efficiency of the support activities only in so far as this does not impede the effectiveness of the focal activities, and therefore of the organisation as a whole. One of the most commonly experienced phenomena in organisations in the self-centred pursuit of departmental objectives, in which each function or department is pursuing its own efficiency, sometimes at the expense of overall organisational efficiency. The advantage of the focal/support dichotomy, though it is not always so clear cut as I am implying, is that it gives us the ability to identify those activities which are directed immediately to environmental satisfaction, whose efficiency directly influences the organisation's success, and those other activities (commonly maintenance engineering, quality control, work study, general administration) whose main function is to satisfy and support the focal tasks and whose performance can best be judged in relation to their satisfaction.

There is a third potential source of conflict: that there are both short-term and long-term desiderata, and although most of the emphasis must be on the satisfaction of long-term needs, short-term needs act as constraints on the long-term solution. It is the long-term development of the organisation which is being sought, but short-term needs will have to be satisfied, and the problem is how best to create conditions in the short run which permit the organisation's immediate survival, but which do not impose any great threat to the development of the system over the longer period. The short term should act only as a constraint, and its needs must not dominate ones whole view of organisational performance.

To recapitulate, what we have been discussing is some means of identifying an improvement in organisational performance. We have suggested that to get any idea of what constitutes improvement in a particular situation, one must use a contingency approach. This entails a clear systems understanding of the way the system works at

the moment and what are the constraints on it; and some criteria for assessing performance in that particular situation.

These criteria, with the need to balance a number of opposing measures of performance, could probably be developed theoretically into a fairly elegant and sophisticated performance measurement. However, in the great majority of cases which one meets in the field, there is no need to elaborate the concepts much more than we have done already. Usually, a detailed examination of the working of a system reveals fairly clearly what are the environmental, the technical structural and behavioural constraints on its operation, and where detailed information is available about the makeup of costs of the various activities in the system, the implications for economic efficiency can be discovered. Thus, by examining in turn cost efficiency and the fit with the environment, the relation between focal and support activities and between short-term constraints and long-term needs, a number of broad alternatives to the present state of the organisation can usually be defined, all of which would, taking into account the necessary constraints on the organisation, constitute areas of better overall performance than the present.

We have also said that a static analysis cannot by itself show the precise objectives which a change programme must pursue, but can only give a general picture of the kind of situations which would constitute an improvement over the present.

The problem of the change agent is then to devise a strategy for change which would move the organisation progressively towards one of these areas, while producing the fewest possible adverse or unforeseen complications. We have in fact developed in the course of this programme some interesting though rather complex principles of strategy formulation, which cannot be dealt with in this paper. Using the same contingency approach, and the same techniques of systems analysis, a management team should be able, with the involvement of other people from within the system, to devise and implement a strategy which will move the system towards a defined area of improvement in progressive steps over a considerable period of time. By monitoring events and opening the strategy to continuous modification as more is learned about reactions of the system to particular changes, the success of such a

strategy can be predicted with a considerable degree of confidence.

4.

If one accepts these ideas about defining improvement, and about implementing and monitoring change, then the question of post hoc evaluation of success may be seen in rather a new perspective. We have said that in the orthodox industrial engineering approach, evaluation of success, like the original objective, tends to be uni-dimensional and to measure how nearly the organisation has attained the single objective that was set at the beginning. Our process of evaluation must obviously be multi-dimensional. However, we have a choice between one which seems at first sight independent of the preconceptions involved in a particular change strategy, and a monitoring process somewhat like that of the industrial engineer.

A more independent method of evaluation, while still multi-dimensional, and based on systems concepts, would be divorced from the monitoring process. It would always be possible to collect information about a large number of performance variables over a reasonable period of time, to measure the degree to which an organisation is satisfying its labour market, its product market, other resource markets and other areas of the environment; and to measure directly or indirectly the efficiency of the transformation process. One can immediately think of twenty or thirty such variables, most of which are available as a matter of routine in most industrial organisations, and which can be turned into indices of environmental satisfaction or economic efficiency. However, a number of problems arise. Firstly there is the question of environmental change occurring concurrently with the implementation process, and necessitating the establishment of experimental controls. More important is the fact that in any change situation some of the indices will necessarily be showing apparently adverse trends, while others are showing improvement, and unless

one has a model of the system which enables one to see the interactions which are causing these differential movements, and some way of interpreting and evaluating movements in different directions, the index would be very difficult to use, and might well become misleading.

It is quite clear, from experience in a number of empirical situations during our own change programme (as well as from contingency theory itself) that no one model of relationships between these variables will apply to more than a few special situations, and that the relationships differ greatly from one industrial situation to another. Hence, one is either going to be led into an assessment of performance which comprises simply a graphical or tabular presentation of differential movements in twenty or thirty different statistics, and use intuition to interpret them; or one must be drawn inexorably towards an index of evaluation designed to fit one industrial situation only. Further, during the change process the relationships in the systems model will, by definition, be changing and the evaluation model must continually be modified to correspond: so it must also fit the specific change strategy being introduced. It is no longer really independent, and it loses the one advantage it has over the second method.

The alternative method makes no claim to be independent of strategy. It would directly measure our success in diverting the organisation away from its original tendency, and towards the area of improved performance which we had defined for it. In that case, the evaluation system itself would be based openly on contingency theory and each evaluation exercise would be tailor-made to fit the particular area being evaluated, the particular strategy which had been devised for that area and the particular stage in the strategy which had been reached. It would measure the success with which each step in the strategy was tackled and resolved, by means of a comparison between the actual performance of the system and what had been predicted for it at that stage. Individual variables in the system would be relevant only in so far as these were related to a developed model showing the interactions of the variables with each other, and predicting changes in the relationships as implementation proceeded. In this case the evaluation criteria and the feedback process which we have suggested to monitor and help modify the strategy as it proceeds, might well be the same thing, or at least

would have a very large overlap.

This suggestion is of course open to dangers, in particular the danger that the criteria of evaluation and the strategy for change are made to support each other, and that the tendency of the evaluation mechanism may be to justify the strategy in all circumstances. There is also a problem of being led into controversy about quantification. Should not a valid evaluation criterion be quantified in some way? And since we say it should be in the form of a systems model which includes elements of social relations in the socio-technical system, is it possible to find means of measuring the relationships which are at the basis of this kind of model?

There are four ways of answering these doubts. We believe a systems view of organisational performance and of change provides a more satisfactory understanding and a more complete picture of real organisations than other approaches, certainly better than many of the approaches which are generally associated with clear measurements of performance. If systems thinking gives us a better understanding and a more reliable predictor without measurement, then we should tend to use it for that reason. Secondly, we have seen that a satisfactory independent evaluation mechanism based on systems concepts is not really possible. It must inevitably come to be based on the same model of the organisation as was used for the formulation of strategy, and it must develop over time as the system changes. An evaluation mechanism which is consonant with the concepts used in the programme of change is necessarily subordinated to the assumptions and preconceptions of the change programme itself.

Thirdly, one condition of success is continuous assessment of results, a constant striving to criticise and falsify conclusions, continuous confirmation that predictions are borne out in practice, or if they are not, continuous enquiry as to why this is so, and readiness to think out again both what is the nature of the system, and what is the appropriate strategy, as feedback information is obtained. By continuing to keep in close touch with the operation of the system, finding as many external checks as possible on progress, and in particular continuous involvement with the people in the system, one is able to avoid some of the dangers of circularity.

The fourth argument was that presented by my colleague Cecily Gorfin to an earlier seminar, last year, in which she argued that if for some reason quantitative confirmation of a model is wanted rather than, or as a complement to, experimental confirmation, then existing statistical techniques can be used by which many of the relationships in the system can be tested, directly or indirectly, so long as data are available in the appropriate form over a long enough period, and so long as relationships remain fairly constant. However, we would agree that statistical confirmation is a rather poor substitute for the confirmation available from the feedback when one begins to implement change. A persistent demand for a statistical method of evaluation by a team of managers or their seniors, in preference to taking the first steps in a strategy for change, could be an indication of anxiety and of a wish to delay the change process, more than of a desire for scientific validation. It could itself be an indication of some of the relationships in the system which are likely to act as constraints on the strategy for change.

What we have been trying to do, then, is to induce change in a controlled way into an area to use the changes we have induced as experimental devices to help us confirm the relationships in our hypothetical model of the situation, and to build on this confirmation to allow us to proceed more and more confidently with the change strategy. At the same time, involvement in all these steps of the managers concerned in the area, as well as of the company's implementation team, will help bring about increased understanding both of the characteristics of the area concerned and of the nature of the whole process of change. If one of the original characteristics of the system is reluctance of those in it to take the necessary steps to bring about an improvement, then the process of starting a movement somewhere in the system can be used as one means of reducing this resistance.

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