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Psychological Barriers to Economic Achievement

by

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Psychological Barriers to Economic Achievement

INTRODUCTION

The decision to write this paper and the form it has taken have followed a pattern more characteristic of organic growth than prefabrication. The author whose childhood had been spent along the banks of the Boyne and who had been somewhat depressed by a brief visit to Ireland at the end of 1956 was stirred by accounts from social scientists in London of a new surge of vitality in Dublin. Ireland's active participation in and contribution to the United Nations and her movement towards membership of the European Community were seen as aspects of a broadly based trend. The new winds which were stirring were reported to have manifested themselves particularly in increased activity in the social sciences and in an increasing awareness of the contribution they could make to the country's development.

A warm invitation to visit Dublin was a response to a tentative letter to the Director of The Economic Research Institute enquiring whether there might be something for a social psychologist, with a little time to spare, to do in Dublin. Emerging from that visit was a suggestion that an account of research dealing with psychological barriers to efficiency in economic performance might be prepared to provide information for leaders in industry, and to serve as a basis for the planning of future research into aspects of industrial organisation and management in Ireland. Clearly such a study is related to the Institute's set of papers on labour-management relations of which the first two have been published.¹

The preparation of such an account was undertaken. It had been anticipated that this would be a relatively straightforward task. In the event this proved to be far from the case. Although there is a very extensive literature on psychological and sociological determinants of economic achievement, it does not fall into any easily organised pattern. There are many publications reporting particular studies. There are also many publications which present the case for a particular theoretical position. There are some publications which review the findings of research within relatively narrow areas such as the effectiveness of incentive payment systems or the degree of success achieved by schemes for worker participation in management. But the reader is left wondering how to find order in all

this, to what extent integration is possible and whether discernible trends and recommended practices have emerged.

Thus, what began as an attempt to provide a review of the work and the human factor in industry for the benefit of social scientists and industrial managers in Ireland, took on a more basic quality of analysing and delineating developments and trends in this field in recent decades. Without wishing to claim any undue validity for his conclusions, the author hopes this paper does make a useful contribution to the discussion on the social determinants of economic achievement.

It may help the reader in his orientation to the paper if some attention is given to two aspects before proceeding to the main body of the discussion.

1. *Relevance to the Irish Scene:* Ireland's movement towards industrialisation and free trade confront the country with both opportunities and challenges. It implies an intention by the Irish people to solve their problems in Ireland rather than by emigrating abroad, a solution made temptingly easy by the open door to the great industrial centres of England and the United States.

The success of the policy depends on the capacity of Irish industry to compete on the open market. This means it rests on the degree of efficiency in production that can be achieved. Efficient production depends on many components including availability of materials, quality of equipment, scale of production and standard of organisation. Our concern in this paper is with the aspect of social organisation.

It is a feature of the Irish scene that there are relatively few large scale enterprises and that the great majority of industrial firms employs 500 or less workers. From the point of view of organisation, this predominance of relatively small scale industry has both advantages and dangers.

On the positive side small concerns have fewer organisational problems and more scope for experimentation and changes than do large enterprises. Because of their smaller size there need be fewer levels in the administrative hierarchy, fewer staff specialists have to be integrated into the organisation, members of staff know one another personally and are aware of each others particular strengths and weaknesses, interests and idiosyncrasies. All this is conducive to good communication and to the avoidance of misunderstandings on matters of policy or practice. In the

¹David O'Mahony, "Industrial Relations in Ireland: The Background", The Economic Research Institute, Paper No. 19.

David O'Mahony, "Economic Aspects of Industrial Relations," Paper No. 24.

small organisation it is possible for management to have a good understanding of the feelings and attitudes of the members of the work force and to take an interest in them on a personal level.

Furthermore it is easier for the worker to identify himself and his interests with the fortunes of the enterprise when the latter is small. He is in a position to understand more adequately the type of problems which the management of such a concern may face and is more likely to respond to any effort by management to take him into its confidence. It is not surprising that profit-sharing schemes have been shown to have far more chance of success in small concerns than in large ones.²

But there are dangers for the small firm in these advantages. Because the problems presented are so pressing, large enterprises have been forced to face the question of organisation, to develop insight into the issues involved and to take action towards achieving optimum conditions. On the other hand it is possible for the small organisation to get by with only a very perfunctory gesture towards organisational matters.

It must be stressed that there is a vast difference between getting by and achieving the best of which the concern is capable. The world is full of individuals and enterprises that are getting by while functioning at a fraction of their potential capacity. The small enterprise might well refrain from relaxing in its more favoured conditions and consider how it might make the most advantage of the opportunities available to it. In so far as it does so, it will be in a better position to compete with the large enterprise which enjoys advantages in other directions.

That there is considerable scope for greater efficiency through more effective use of human resources is widely accepted in progressive management circles. Drucker³ (p. 225) commenting on the management of the worker, maintains that it has become widely accepted in American management that, of all economic resources, the least efficiently used is the human resource, and that the best hope for a higher level of economic performance is to be found in raising the level of effectiveness of people in their work.

2. *The Emerging Theme:* The paper was intended primarily as an examination of the psychological factors which influence the level of economic achievement. In this context two types of situation appeared to be of particular significance.

The first is that of the employee on the workshop floor. He is the person who carries out the physical

²Marriott, R. "Incentive Payment Systems: A Review of Research and Opinion", Staples Press Ltd., London 1957.

³Drucker, Peter F., "The Practice of Management", Mercury Books, London 1961.

tasks under the direction of supervisors and higher management. The problem here is to organise the work situation for him on such a basis that his full co-operation is enlisted and his effort integrated smoothly into the overall activity of the concern.

The second situation is that of the person who has available to him new and more effective techniques for achieving economic objectives, but for some reason continues with older and less effective procedures. This may apply to the worker on the production line, but seems to be of much greater importance in the higher levels of management where decisions on methods of production are taken.

At first sight it would seem that these two types of situation have little in common. However in examining the literature covering the management of the worker on the production floor, it seemed to the author that the most significant idea emerging was that of socio-technical systems outlined in the writings of Trist and associates. In broad terms, the essence of this concept is that the organisational pattern employed in a particular enterprise should be determined, not by some *a priori* notion of what constitutes good organisation, but rather by the demands of the particular work that has to be done. The position has been stated clearly by Wilfred Brown.⁴

"Effective organisation is a function of the work to be done and the resources and techniques available to do it. Thus changes in methods of production bring about changes in the number of work rôles, in the distribution of work between rôles and in their relationship to one another. Failure to make explicit acknowledgement of this relationship between work and organisation gives rise to non-valid assumptions e.g. that optimum organisation is a function of the personalities involved, that it is a matter connected with the personal style and arbitrary decision of the chief executive, that there are choices between centralised and decentralised types of organisation etc. Our observations lead us to accept that optimum organisation must be derived from an analysis of the work to be done and the resources and techniques available."

The accounts by Trist and associates of organisation at the coal face in North-west Durham coal-mines and by Rice's of organisation in a textile mill in Ahmadabad, India, which are reported in the body of the paper, illustrate the application of this principle to differing industrial settings. Brown's publication is itself a very lucid account of its application in the Glacier works of which he is the general manager.

An enterprise exists for the purpose of performing

⁴Brown, Wilfred, "Explorations in Management", Heinemann, 1960.

a task, or more usually, a series of tasks. A coal mining enterprise, for instance, may exist to extract the coal from the ground, process it and distribute it to its customers. The pattern of work organisation (e.g. the autonomous, self-selected work team in which work rôles are rotated and which assumes responsibility for all work over all shifts on a given section of coal face found by Trist *et al* to be particularly appropriate for mechanised coal mining operations⁵) may vary sharply from task to task. The form of organisation that is most appropriate for getting the work done at the coal face may be quite inappropriate for the task to be performed in the processing plant or in the distribution section.

It must also be recognised that there are no rigid limits to the tasks an enterprise may or may not include within its range of activities. Our coal mining enterprise might include within its activities not only the extraction, processing and distribution of coal and its products, but might also have research divisions concerned with developing new techniques for processing coal or utilising its by-products, or for developing new equipment for extracting coal, or for analysing the market and promoting sales. On the other hand there is no reason why each task may not be left to a separate enterprise. Thus one firm could extract the coal, another process it and a third distribute it while the various research and development tasks might be performed by other agencies.

What is important is that not only should the social organisation governing the relationships of those performing each of the separate tasks be such as to utilise most fully the resources of those engaged on them, but also that the various groups engaged in the different tasks should be so related to each other that the overall resources available are fully utilised. Thus if a research division develops a new and more efficient system of coal extraction, but for some reason (e.g. through lack of information or worker resistance) the new technique is not put into operation at the coal face, the overall resources of the larger system which includes both are not being fully employed. From the point of view of efficient production it is irrelevant whether or not the research division is located within the enterprise engaged in the extraction of coal.

Any given society can be regarded as consisting of a number of task groups each with its own internal organisation and each related to other task groups within the larger systems. In general the larger the system the more difficult it is to develop an organisation which utilises to the full the resources

⁵Trist, E. L., Higgin, G. W., Murray, H., Pollock, A. B., "Organisational Choice: Capabilities at the Coal Face Under changing Technologies", Tavistock Publications, 1963.

within the system. The extreme case is that of the world society comprising the whole population of the earth. It is obvious that, taken as a whole, this world wide system is grossly inefficient. It is utilising only a very minute portion of the total resources available to it for economic achievements.

There is thus a continuity from the organisation within a given enterprise which influences the attitudes and decisions of its work force, particularly in the lower levels of its hierarchy, to the organisation of the society within which the enterprise operates and which also influences the attitudes and decisions of the members of the concern and is of particular economic significance in its effects on those in the upper levels of the hierarchy. The limited scope of this paper prevents us from exploring this theme in any detail. It is being considered more fully by Dr. Emery of the Tavistock Institute of Human Relations within the context of open system theory.

However, since the level of economic achievement is so profoundly influenced by the extent to which new discoveries and inventions are utilised in the production process, a later section of the paper takes up the question of the way in which social organisation and social processes within the community influence the adoption of such innovations. It will be noted that whereas in the earlier part of the paper the emphasis is on organisation in secondary industry in this latter part rather more attention is given to primary industry. Some brief comments on this point may help to smooth the transition for the reader.

The production tasks in primary industry have features which distinguish them from those normally found in secondary industry. Notable among these is the highly dispersed nature of the work to be done on the land which makes close supervision difficult and inappropriate, and which consequently calls for a greater degree of initiative and sense of responsibility on the part of those engaged in doing the work. The nature of the task to be carried out in primary production thus calls for a type of organisation which differs considerably from that normally found in secondary industry. Experience suggests that the most efficient form of organisation is that of a series of small autonomous family groups each in private ownership of an appropriate area of land. Those countries in which, for political or ideological reasons, such a pattern of organisation is not permitted seem to have chronic problems in the area of food production.

The small autonomous work group has fewer problems of internal organisation. It therefore does not receive attention in the earlier part of the paper which is concerned largely with such problems. However, when we come to consider the questions of relating autonomous work groups to each other,

the issues are obviously more complex and difficult when we are dealing with a large number of small units than when we are concerned with a small number of large units.

Rural sociology has developed in response to the need to facilitate the flow of communication from sources of new ideas and techniques in agriculture—usually from laboratories and research stations—to the farmer. Although the principles involved in the transmission of such information and in bringing about the adoption of the innovations concerned have been shown to be very similar for such diverse groups as medical practitioners in the use of new

drugs and treatment procedures, factory managers in their use of new equipment and techniques, education officials in their use of new ideas and practices in teaching, and farmers in their use of new development in farm technology, most attention has been paid to the study of innovation in the rural scene.

It is perhaps also to be noted that since this paper was intended to be relevant to the Irish scene, and since rural production plays such an important rôle in the Irish economy, it seemed desirable where appropriate to give attention to rural studies which seemed likely to have some local relevance.

Psychological Barriers to Economic Achievement

by P. PENTONY *

PART I

SECTION I. THE HAWTHORNE FINDINGS

Economic achievement occurs when human beings apply their peculiarly human talents in shaping the material environment to their needs. While the extent to which this may be done is influenced by the characteristics of the material environment, the major changes in levels of economic achievement through the centuries have been brought about by the more effective use of such resources as human intelligence and capacity for co-operation. It is likely that this will continue to be the case. The provision of conditions in which creativity can flourish and in which the whole-hearted effort of the worker will be enlisted, are essential components of any programme that would maximise economic productivity.

It is apparent that in large sections of industry conditions fall considerably short of the optimum. The workers do not always give of their best, they do not always co-operate in a whole-hearted manner and their creative talents, if employed at all, are not necessarily used in the interests of economic achievement. On the contrary there is ample evidence that they frequently adopt tactics aimed expressly at frustrating management's objectives of higher production.

There was considerable awareness through industry by the end of the first world war that the worker, as a social being, was motivated by considerations other than the purely economic incentive. It was, however, the series of investigations carried out by Elton Mayo and his associates at Harvard for Western Electric in their Hawthorne plant in Chicago⁶ that focused attention on the significance of human relationships in the work situation. Since this classic study is generally regarded as having marked a turning in management thinking about the worker, it will serve as a starting point for our discussion.

*The author of this paper was associated with The Economic Research Institute during March-August, 1964, while on sabbatical leave from the Australian National University, Canberra. The paper has been accepted for publication by the Institute. The author is responsible for the contents of the paper including the views expressed therein.

⁶Roethlisberger, F. J., & Dickson, W. J., "Management and the Worker", Harvard University Press, 1939.

The study began in 1925 with a series of experiments on the effect of different conditions of illumination on the efficiency of workers. This was an orthodox type of investigation for that period when the emphasis was on the effect of physical conditions on worker productivity. As is usual in studies of this nature two groups of workers were used. A control group worked under conditions of illumination which were kept as constant as possible, while the test group was subjected to three different intensities of illumination of increasing magnitude of 24, 46 and 70 foot candles. Production increased to approximately the same extent in both groups. The test group was later subjected to conditions of decreasing intensities of illumination from 10 to 3 foot candles while conditions remained constant for the control group. Again the output went up in both groups. In a further experiment the workers were allowed to believe that the intensity of the illumination was being increased though it was in fact unchanged. The workers commented favourably on the improved lighting, but showed no appreciable change in output. Later, when they were led to believe the illumination was being reduced, while in fact no change was made, they complained about the poorer lighting, but their output remained as before. Then in an experiment when the intensity of illumination was progressively decreased, it was not until it fell to roughly the equivalent of moonlight that any appreciable decline in output was observed.

These results were obviously confusing and unsatisfactory. The evidence suggested no connection between illumination and efficiency, but this did not seem likely. The investigators at least were not satisfied. They argued that there were too many uncontrolled variables operating, so they decided to carry out their next experiment under conditions which would give them much more effective control over possible variables.

This time they set up a small annexe in which conditions could be controlled, output measured and the workers observed throughout. Five women who were engaged in assembling telephone relays

were taken from the main workshop and set to work in the annexe. Over a period of several weeks prior to their movement to the annexe their output was carefully checked. In the annexe records were kept of such variables as temperature and humidity, the kind and amount of food each woman ate at each meal and the number of hours she slept at night. Each woman had a physical examination at regular intervals. Automatic devices were used to measure the amount of time it took each worker to assemble a telephone relay and quality records were kept.

This relay assembly experiment was continued over a period of two years. At approximately two monthly intervals changes were introduced into the working conditions. These involved the introduction of rest pauses with variations in their length and frequency, and with changes in the length of the working day and working week. In the first period the rests were of five minutes in mid-morning and mid-afternoon. In subsequent periods the length of the rest was increased progressively. For a while a light meal was served in the morning rest. The length of the working day was reduced first by a half hour and then by an hour. For a time Saturday morning work was discontinued. Thirteen periods of such change occurred over the two years.

It should be noted that the trend for the first eleven periods was towards more favourable working conditions. Over this time the output rate progressively increased until it was 30% above the original rate. Then in the twelfth period the workers were reverted to the original conditions of a 48 hour week without rests. According to the theory of fatigue effects that was being tested, output should have fallen sharply. In fact, it remained at the level to which it had climbed. In the following period, when rests were again introduced, output again rose slightly.

It was clear that the experimental variations which were being introduced were of minor significance in comparison with some more basic change that was taking place. The observers noted that the workers seemed to be getting more satisfaction from their work and enjoying their rôle in the experiment. The research team, at this stage alerted to the question of worker attitudes and morale, began to study the social conditions operating in the general work situation. To this end they embarked on a large scale interviewing programme. Over the years 1928 to 1930 some 20,000 employees in the plant were interviewed. Special interviewing techniques were developed. These encouraged free expression, and put the stress on listening intently to what the subject was communicating in an effort to understand how he perceived his

situation and how he felt about it. An unexpected and interesting by-product of this interviewing programme was that many workers, after having an opportunity to ventilate their real or imagined grievances, became much more co-operative in their relations with supervisors and fellow workers.

In one part of this study of worker attitudes known as the Bank Wiring Observation Room⁷ insight was obtained into the way output was restricted by the workers. In this study 14 men were withdrawn from a department concerned with the wiring and soldering of telephone equipment. While interviewing in the main department, the investigators had noted the unanimity of opinion among the workers that the wiring of two "equipments" constituted a full day's work. This was less than the standard set by the wage incentive system in operation. The men were paid on the basis of group piece work with the entire department considered as a unit for this purpose. It might be expected that it would be to everyone's advantage to keep production high and that the men would put some pressure on their fellow workers to pull their weight. This part of the study lasted just over six months, with very detailed records of behaviour and output being kept by an observer who was present all the time.

There was evidence of restriction of output from the records which remained fairly constant from week to week both for individuals and for the group. The average morning rate of working always exceeded the afternoon rate with the difference being most noticeable in the case of the faster workers. In recording their own output, the amount stated rarely agreed with the amount actually done. They adjusted their daily rates to make the weekly total always about the same. This preoccupation of the men with maintaining a constant output was particularly noted by the research team.

Interviews with the workers suggested the existence of various fears. They were afraid that if they exceeded their day's quota by an appreciable amount something unfavourable would happen. The "rate" might be cut, the "rate" might be raised, the "bogey" might be raised, someone might be laid off, or the supervisor might "bawl out" the slower men. The observer noted that anyone who exceeded the standard set by the group was subjected to "sarcasm and ridicule" and "binging" or hitting on the upper arm. It was also observed that within the group there were subgroups or "cliques" which exercised considerable control and influence. In short there was evidence of an informal organisation whose function it was to protect the group against exploitation from outside and to maintain internal discipline and unity.

⁷Roethlisberger and Dickson, *op. cit.* p. 409-447

It was also noted that the workers varied in the way they fitted into this informal organisation, and that this, rather than natural ability, seemed to be the factor determining the individual's output. The best liked person was the one who kept his output just where the group agreed it should be. One man who exceeded the standard apparently enjoyed doing things that the others disliked. In an effort to assess native ability the investigators used psychological tests of intelligence and dexterity. They found that the lowest producer in the room ranked first in intelligence and third in dexterity, while the highest producer was seventh in dexterity and lowest in intelligence. Roethlisberger,⁸ commenting on this says "From the viewpoint of logical, economic behaviour this room did not make sense."

In an effort to check further on the rôle of incentive payment, further studies were carried out with relay assemblers. The members of the Relay Assembly Group described earlier had been paid, while in the workshop, on a piece rate basis calculated on the output of their group of 100 workers. After being put in the annexe they continued to be paid on this same basis for the first five weeks while they settled in. After this adaptation period, it was decided that, in computing their piece work earnings, they would be paid as a group of five. This meant, of course, that in the smaller group the output of each worker was more directly reflected in her weekly earnings. Since the rise in output started immediately after this new basis for calculating the earnings of each member, it was decided that an attempt should be made to assess the effects of this change. Two further experiments were carried out.

In the first of these another group of five experienced workers who had worked on different benches in the Relay Assembly Department were brought together on the one bench, but still in the main department. For five weeks their earnings were based on the group of 100 as before. Then for the next nine weeks they were paid on the basis of their output as a group of five. There was an increase in output of 12.6%. Then over the following seven weeks they were reverted to the original payment system. Output dropped to below that of the first five weeks and to 16.2% below the period of the small group incentive.

In the second of these two experiments the wage incentive factor was kept constant while the other

⁸Roethlisberger, F. J., "Management and Morale", Harvard University Press, Cambridge 1947.

conditions were varied. A group of five experienced workers from the Mica Splitting Department were removed to a test room in rather similar manner to the first Assembly Relay Group. This Mica Splitting Group was used because these women were all working on individual piece rates and so could be moved without any changes in the payment system. Again they were left to work as before for five weeks. Then followed three periods of twenty-nine, forty-eight and seventeen weeks during which various changes were made in hours of work and rest periods. Output, after a small initial drop, began to rise and reached a peak, after about fourteen months, of 15.6 per cent above their average in the main department. At that point it began to decline due, it was thought by the investigators, to anxieties about the depression and other changes which were taking place outside the test room.

From these two experiments the investigators concluded that there was nothing to justify the view that the continuous gain over two years in the Relay Assembly Test Room could be accounted for by the wage incentive factor alone. They maintained that its efficacy was entirely dependent on its relation to other factors such as the interpersonal relations both at work and outside work.

The Hawthorne investigations extended over several years. They marked the birth of the "human relations in industry" approach which called for a new view of the worker. Whereas previously he had been thought of as an isolated individual to be motivated by money incentives or the threat of dismissal, the new view showed him as a member of groups, a participant in social interaction in which he exerted influence on and was in turn influenced by the behaviour and standards of his fellows. The research team demonstrated that these social forces were powerful. If the informal work group set a quota then achievement was kept to that level. If the group came to adopt managements goals, as apparently happened in the first Relay Assembly Team, then production improved. The advice tendered to management was (a) to recognise that the worker was essentially a social being very dependent emotionally on the informal groups to which he belonged both at work and elsewhere and (b) to become expert at working with and through these groups so that their goals would be aligned with those of management and their influence harnessed to the chariot of higher productivity.

SECTION 2. ACCOUNTS OF RESTRICTIVE PRACTICES

Before going on to consider the proposals of the human relations school, consideration must be given to the evidence of restriction of output under normal operating conditions in industry. There is a wealth of material on this subject which suggests that some form of restriction is the general rule. This was known some time before the Chicago studies put it into a new conceptual framework. Indeed Madge⁹ quotes Taylor, the father of scientific management and innovator of the time and motion study technique, as having said, in relation to managerial rate cutting practices: "Working men are not angels, but whatever else they are, they are not damned fools. All that is necessary is for a working man to have one object lesson of that sort (i.e. rate cutting) and he soldiers for the rest of his life . . . I did it when I was at my trade. I worked just so that I earned 2.50 dollars a day."

Myers¹⁰ describes several instances occurring during the first world war, in which workers on both individual and group work systems of incentive payment maintained an identical output rate over many days, nights or weeks. It was noticed that when the machines stopped for any reason the stoppage would be followed by an increased rate of production for a short period. In two cases temporary increases of between 75 and 90 per cent. and 136 and 142 per cent. occurred after machine breakdowns, yet the total output per night was maintained at a fixed amount. Myers concludes that the worker had a specific output target, well within the range of achievement, and output was geared to this. He quotes a particular instance where, in each of the shops of a factory 5,000 of a particular article were produced weekly. The management decided to open a new shop identical with the others in all respects except that inexperienced operatives were engaged. These, being new to the job, were free of any traditions about output. At the end of six months' practice, this new factory was producing 13,000 of the articles per week, while each of the other old shops continued to produce 5,000.

Dyson¹¹ as reported by Marriott¹² gives an example from the second world war that bears an interesting resemblance to the above case reported

⁹Madge, C., "Payment and Incentives of Occupational Psychology", 1948, pp. 39-45.

¹⁰Myers, C. S., "Mind and Work", University of London Press Ltd., London 1920.

¹¹Dyson, B. H., "Whether Direct Individual Incentive Systems Based on Time-Study, However Accurately Computed, Tend over a Period to Limitation of Output". Paper read at Spring Conference, 1956, British Institute of Management.

¹²Marriott, *op. cit.* p. 145.

by Myers. In this case a particular item was being made by a hand operated machine. The time study rate for this machine was 1,200 articles per hour. An attempt was made to introduce a foot-operated machine so that the worker would have his hands free for loading and unloading. However both the operators and the foreman could prove that the foot-operated machine was slower and that the worker could earn a better bonus on the hand-operated machine. So the job was moved to another factory where the workers were paid on a straight time basis and the foot machine was used. Production was maintained at 1,700 articles per hour.

D. Roy¹³ worked as a participant observer in industry. For eleven months he worked as a drill operator in a machine shop of an engineering works. He noted both his own reactions to the incentive payment system and those of his fellow workers. His output records were typical of the average worker in the factory.

He reports that the piece work jobs were classified by workers as those in which it was easy to make a reasonable amount of money, and those in which it was difficult. The former in which "loose" rates applied were known as "gravy" jobs, while those with "tight" standards were known as "stinkers". At the time (1945) the basic wage was 85 cents an hour and earnings of one dollar an hour was apparently the dividing line between a good rate and a poor one. On a "gravy" job there was an understanding that earnings would be kept at 1.29 dollar an hour. Roy calls this "quota restriction". On a "stinker" the workers put forth only a very limited effort and production was kept so low that earnings were much lower than the basic wage. Roy's term for this is "gold bricking". Its purpose was to put pressure on management to increase the rate of the job.

Thus if the rates were such that it was easy to earn a good income, the workers set a modest target, and knocked off when they reached it. If the rates were such that it was hard to earn good wages, the workers reduced their effort to maintain a minimal output. However, when the rates became extremely unsatisfactory from the workers' point of view, then restriction went beyond the stage of "gold bricking" to the "slowdown". Open strife between workers and management did not occur as an outcome of either "quota restriction" or "gold bricking" but it did from "slowdown" which was regarded as a form of sabotage. Roy describes one instance of this known as the hinge base fight where slowdown action succeeded in raising the

¹³Roy, D., "Quota Restriction and Gold Bricking in a Machine Shop", *American Journal of Sociology*, Vol. 57, 1952.

rate for a particular job from 23 cents to 31 cents which was still regarded as unsatisfactory.

Baldamus¹⁴ commenting on this report by Roy says: "To anyone who reads Roy's report carefully, the most conspicuous point is the high degree of certainty with which different kinds of operation are compared and summarily classified as "bad" or "good", "hard" or "easy". This does not only imply that different people must experience the various components of effort in a similar way. It also means that they share specific expectations in respect of gross earnings: for the criteria of "good" and "bad" refer to the varying chances of earning a given amount of money. Thus what is standardised is in fact the value of effort in terms of the employees' wage expectations.

Wyatt¹⁵ gives another example of restriction of output. He was asked to examine sharp differences in output from two factories. These factories were under the same general management but were a considerable distance apart and under different local managers. From mid-1946 to the end of 1948 they were engaged in making concrete slabs and posts for prefabricated houses. From November 1946 they were paid a group bonus on output. Over the two years the average work strength in one of these factories (Factory A) was 130 and in the other factory (Factory B) it was 178. Equipment and layout in the two factories were similar. However, for the first year output was 70 per cent. higher, and over the two years 43 per cent. higher in Factory A than in Factory B.

The differences began with the introduction of the group bonus system. This required the setting of standard times in man hours per completed house using the usual time study procedures. Top management ordered that the scheme should come into operation within ten days. In that period, the time study of the operation had to be carried out, the standards fixed, teams organised and the work methods explained. These operations were carried out with considerable care in Factory A and the standard time of 243 man hours to complete a house was regarded as temporary. In Factory B a more stringent rate of 196 man hours was given as permanent and "in a rather perfunctory manner". It is obvious that on this basis the men in Factory B had to do 20 per cent. more work than Group A before they would begin to earn a bonus.

The men in Factory B protested against the standard, which they refused to accept. Work proceeded on a basis of occasional allowances which varied from 25 to 60 per cent. of the standard.

¹⁴Baldamus, W., "Efficiency and Effort: An Analysis of Industrial Administration", Tavistock Publications, 1961.

¹⁵Wyatt, S., "A Study of Output in Two Similar Factories", *British Journal of Psychology*, Vol. 44, pp. 5-17.

Over the first fourteen months there were seven increases in the standard time until it was 44 per cent. above the original 196 hours. In Factory A over the same period they were reduced by 6 per cent. and the occasional allowances never exceeded 5 per cent. The men in Factory A earned a bonus from the beginning. The men in Factory B only began to earn a bonus in the second half of the two year period. At this point the standard time had been raised to 282 man hours per house and output rose sharply. The time taken to complete a house dropped from about 330 to some 220 man hours. A little later it became known that the work was soon going to be discontinued and the man hours per house dropped to 180.

A final example illustrates a feature noted in other studies including the Hawthorne Bank Wiring Room case. This is the policy adopted by workers of making false entries of output per shift or working period with a view to stabilising the weekly wage rate. Baldamus¹⁶ describes a study by Lupton and Cunnison¹⁷ which substantiates Roy's findings and reports on this practice of entering false figures in the records of output. The difficulty of maintaining output in any given operation varies according to such factors as continuity of supply of materials and components, machine breakdown and so forth. The worker cannot control these factors, but to balance the potential fluctuations he can over-book and under-book the number of pieces produced. When conditions are good output is under-booked so that a reserve is created against the time when conditions are bad. This practice, known as "fiddling", was condoned by management. Its main purpose seems to have been to ensure a relatively stable wage.

The foregoing constitute a sample of reports on restrictions of output. The implications are that it is widespread throughout industry, and that it would be a rare workshop in which it was not operating in some measure. Whyte¹⁸ claims that current theories of motivation used in industry promote full effort from less than 10 per cent of employees. Those who do fully respond to the incentive provided—the "rate busters"—are individualists who have renounced the group. At the other end are those who have renounced the incentive and put forth only a minimal effort. Between these two extremes are the main bulk of workers who are pulled in both directions by the money incentives and the group pressures.

¹⁶*op. cit.* p. 93.

¹⁷Lupton, T. C., Cunnison, S., "The Cash Reward for an Hour's Work Under Three Piecework Incentive Schemes", *The Manchester School*, Vol. 25, 1957.

¹⁸Whyte, W. F., "Man At Work", The Dorsey Press & Richard D. Irwin Inc., Homewood Illinois, 1961.

He points to a connection between the individual's life history and his response to management's attempts to use incentives. In a study carried out with Dalton he found that "restricters" were likely to be the sons of unskilled industrial workers and to have grown up in large cities where they had been active in boys' gangs. This type of activity went with a loyalty to one's own group and opposition to authority. The "rate busters" on the other hand, were more likely to have come from farms and small towns where they had been under close parental supervision with little opportunity to develop gang activities, and a strong sense of loyalty to the group.

There are interesting implications in these comments by Whyte. In effect he is pointing out that the workers are not to be thought of as an undifferential group with a single aim and pattern of behaviour. On the contrary, the industrial work force represents a coalition of individuals with a range of interests, attitudes and values, but held together by a common interest in a power struggle

with management. Within the worker ranks there is considerable mutual suspicion. Marriott¹⁹ in the course of a very thorough survey of incentive payment systems says "Various surveys of workers' attitudes have shown that restriction is not always a matter of collusion among workers and that accusations of output restrictions are not made only by management; work mates are frequently accused of 'not pulling their weight'." He goes on to quote statistics from surveys of workers' attitudes showing that from 18 to 30 per cent of workers complain that others are slacking. Complaints of this sort are most frequent under group payment systems in which the groups are large. This he attributes to the greater chances of having some slackers in large groups and also to the fact that men tend to be more suspicious of those who are out of sight. There were also more complaints of slackers in work situations where each man was free to set his own pace as opposed to those situations where the speed of work was set by a conveyor belt.

¹⁹*op. cit.* p. 140.

SECTION 3. SOME CONFLICTING PRINCIPLES OF MANAGEMENT

The type of restriction on output which we have been considering occurs under administrations following widely held principles established by such fathers of scientific management as Taylor and Gilbreth. These principles have been summarised by Likert²⁰ as follows:

1. Break the total operation into simple components or tasks.
2. Develop the best way to carry out each of the component parts.
3. Hire people with appropriate aptitudes and skills to perform each of these tasks.
4. Train these people to do their respective tasks in the specified best way.
5. Provide supervision to see that they perform their designated tasks, using the specified procedure and at an acceptable rate as determined by such procedures as timing the job.
6. Where feasible, use incentives in the form of individual or group piece rates."

These principles are still widely accepted in industry. However, the Hawthorne studies, outlined above, marked the beginning of a challenge to the assumptions on which they are based. They did not set out to do this, but the trend of the observa-

tions led to conclusions which were not compatible with the established views, and which called for a reorientation in management's conception of the worker and his motivation. This new approach came to be known as Human Relations in Industry.

Elton Mayo and his associates of Harvard began to develop a new philosophy for management. They argued that social needs are among the most powerful forces motivating people. The desire to stand well among one's fellows, and the fear of rejection or isolation, make individuals very dependent on the groups to which they belong. This is true of all persons irrespective of their position or status. So far as the lower level employee is concerned, his attitudes, which have a powerful effect on his productivity, are largely governed by the informal groups to which he belongs at work. Production will be reduced if these groups are aligned against management's objectives. It is therefore management's tasks, in so far as it is practicable, to integrate these informal groups into the larger group comprising the whole enterprise so that the group sentiment will be harnessed to the cause of higher productivity.

The advocates of this policy saw no obstacles to its accomplishment other than the lack of a highly trained managerial elite, skilled in the management of men rather than the management of work. They saw no reason why the objectives of the informal groups should conflict with the objectives of management. In their views small groups only resist the

²⁰Likert, R., "New Patterns of Management", p. 6. N.Y. McGraw Hill, 1961.

larger whole of which they are part when their existence is threatened. So, by recognising and, if necessary, protecting the informal groups, management could create a situation in which these would endeavour to satisfy their interests by cooperating with the wider organisation.

The task facing management then, was to develop skill in the handling of men. The emphasis was on dealing with individuals in face-to-face groups. The implications were that if supervisors could be taught to treat their subordinates as human beings with social and emotional needs rather than simply as bodies to get the work done, relations would be harmonious and work would be efficiently performed.

The leads turned up by the Western Electric research programme were not immediately followed up. The main reports of that study were published in the period 1935 to 1939 based on field work that terminated in 1932. The next studies began about 1942 and the pace of research quickened over the next two decades. During that time it became increasingly apparent that something more than skill in interpersonal relationships was involved in ensuring cooperation between worker and management and in enlisting a whole-hearted effort in the cause of production. Whyte²¹ makes the point that the issues involved go beyond the individual and his social skills.

²¹*op. cit.* p. 11-13.

SECTION 4. SOME TRENDS IN THEORY AND RESEARCH IN ORGANISATION

Over the last two decades many investigations into sociological aspects of organisation in industry have been carried out. There has, moreover, been considerable discussion in the attempt to establish a systematic theoretical approach. The studies reported below seem to be among the more significant examples:

The Case of Sears, Roebuck and Company: Whyte²² reports on the case of Sears, Roebuck and Company. In 1949 there was a sudden recession which hit retailing business in the United States. Sears, Roebuck and Company which have hundreds of department stores throughout that country were affected. Subsequently a survey was carried out, within the company, to examine its response to this crisis. Attention was paid particularly to stores of intermediate size with approximately thirty-two departments. No firm pattern of organisation had been established for such stores, but two broad types of management had developed. In one type which we may call the shallow pattern, there was a store manager, an assistant manager and thirty two division managers. The assistant manager and manager shared much the same duties and together constituted the management team. In the second type which might be called a deep pattern, there was a store manager, five or six second level managers, each with four to six division managers reporting to him. In the first type there were two, and in the second type three, levels of management above the sales staff. The statistical data on costs and profits showed that the shallow pattern of organisation was much more effective from an economic viewpoint. It was also noted that the shallow pattern produced more than its share of personnel considered suitable for promotion to higher levels while the deep pattern produced less than its share.

²²Whyte *op. cit.* pp. 88-97.

Whyte's argument is that in the deep type of organisation the store manager, having only a small number of people reporting directly to him, was in a position to supervise their work very closely. These second level managers were in a similar position in relation to their immediate subordinates. The system was conducive to dependence of subordinate on superior, and operated against the encouragement of initiative and readiness to back one's own judgment. In the shallow type of organisation, however, it was impossible for the store manager to exercise close supervision on the thirty department heads. Consequently he had to choose men for these positions who could be relied on to exercise good judgment and initiative and then give them a free hand to run their departments. This system not only gave the department head more freedom, it also gave him more responsibility both for such success as he achieved and such failure as he incurred. It provided strong motivation for the departmental manager to extend his knowledge and grasp of his job.

The research team, before recommending that the deep organisation pattern be replaced by the shallow type, took a close look at the managers of the two types of stores. They found an interesting connection between the personality of the store manager and the type of organisation he had built up.

The manager of the shallow type structure appeared to be a person with an optimistic view of people. He expressed faith in his subordinates and took pride in their successes. The manager of the store with the deep type structure seemed to have a more pessimistic outlook on human nature. He tended to hold the view that it was difficult to get reliable people any more, and that the current generation had been ruined by current social, political or educational policies. Each type of

manager seemed to be getting from his subordinates the sort of behaviour he expected from them.

The question arises as to whether the attitudes of the manager created the organisation pattern, or whether the organisation pattern with its behavioural consequences produced the manager's attitudes. The available evidence suggested the priority of the personality aspects. When the manager of a store with the shallow type of organisation was transferred to one with the deep structure, he was soon reporting to higher management that he did not need all the management people he had. He was trying to dispense with one level of management in order to achieve the type of structure which he preferred. The reverse applied when a manager from the deep type of structure was transferred to one which had operated on the shallow organisation. He was soon creating new management positions.

The Ahmadabad Experience

Rice²³ describes a study carried out by the Tavistock Institute of Human Relations in collaboration with the management of a large textile mill employing over 8,000 workers at Ahmedabad in India. This study was carried out over the years 1953 to 1956 during which time changes were carried through in virtually all aspects of the organisation from the basic process of weaving the cloth to the overall management of the enterprise.

The study began with an investigation into problems associated with the use of automatic looms. Although by far the greater quantity of weaving was carried out with non-automatic looms, over two hundred automatic looms had been acquired, and work on these was organised on British and American lines with different workers allocated to different operations. The results on these automatic looms were unsatisfactory.

Investigation showed a high degree of specialisation with a large number of grades of worker. The members of each shift acted as individuals each seeking to carry out his task independently. Supervisors were extremely busy solving problems and difficulties which were continually arising. The shift group, in effect, functioned as an aggregate with little coordination. Members of higher management added to the troubles of the Automatic Loom Shed because, being concerned about its poor performance, they were continually entering it and becoming involved in supervision.

Reorganisation in this section was based on three principles of task organisation.

"1. A task should be so organised that those engaged on it can experience, so far as it

²³Rice, A. K., "Productivity and Social Organisation: The Ahmedabad Experiment", Tavistock Publications, London, 1953.

is practicable, the completion of the whole task.

2. A task should be so organised that, so far as possible, those engaged on it can control their own activities.
3. Related tasks should be so organised that those performing them can have satisfactory relationships."

Following these principles the number of different types and classes of worker were substantially reduced and the range of activities of each increased. Work teams of seven members to operate blocks of sixty-four looms per team were established. The teams were self-selected after the principles of reorganisation were outlined and volunteers called for to operate the first trial groups. Each team was given responsibility for organising the work involved in servicing and operating the group of sixty-four looms. The workers were enthusiastic about the new pattern of work from the start. Although there were some difficulties in the early stages the system proved to be both highly efficient and very satisfying to the workers.

The success achieved in the Automatic Loom Shed led to reorganisation in the other sheds where traditional ways of working had been established for a long time. Here, too, the new pattern of working was found more satisfactory and resulted in changes adapted to the particular circumstances of each shed. The increased output in turn led to reorganisation in the sales department which had to find new outlets for the product. In the meantime a transformation was taking place in the overall management structure. A system of management was developed which was more in harmony with the technological requirements of the production process, but which, above all, took into account the needs of those carrying out the work.

Rice based his programme at Ahmadabad on findings which had been made in a very different technological system with very different people. In his introduction he acknowledges his indebtedness to Trist who introduced the concept of the socio-technical system. This concept was first put forward in 1951 after an examination of coal-getting methods in British mines.²⁴

The point Trist made was that any production process requires two organisations. There is the technological organisation involving the layout of machines and equipment, and there is the work organisation which relates to each other those who carry out the work. The technological requirements set limits to the type of work organisation which can

²⁴Trist, E. L., & Bamforth, K. W., "Some Social and Psychological Consequences of the Long Wall Method of Coal Getting", Human Relations, Vol. IV, No. 1, 1951.

be employed, and in industrial production systems the technological system takes priority. The trouble arises when the assumption is made that there is only one work organisation that will satisfy the technological conditions and that the men have to be treated as if they were machines. When this happens the work organisation fails to meet the social and psychological needs of the work group thereby generating attitudes to the performance of the task which prevents the most effective use being made of the technological resources.

Long Wall Coal Mining

Trist, Higgin, Murray and Pollock²⁵ report on the organisation at the coal face in the North-west Durham coalfields over the period 1954-58. The systems of working these seams had been changing and were still in the process of being changed by increased mechanisation. Different methods of coal getting were operating at different faces. The report is mainly concerned with the relative efficiency of different systems of work organisation where similar technological systems were operating.

When the study began management felt that the increased mechanisation which had taken place had not resulted in the increase in production which could reasonably have been expected. Indeed, production per man-shift was not much higher in the mechanised section than in the unmechanised parts where traditional methods of single place working were operating. It was thought that the relative failure of mechanisation might be due to socio-psychological factors. The traditional single place system had been developed on a team basis in which each man performed a series of tasks at the coal face and the teams consisted of all those who worked at that face over all shifts. Thus if only one man could work at the face at a time and three shifts were worked, the three men would constitute a team, which would be responsible for all the work at that face. If two men could work together at the face and three shifts were worked, the team would comprise the six men involved. The teams were self selected and payment was made to the team as a whole according to its output. This system ensured that all tasks at the coal face including safety measures, would be taken care of, and that there was continuity and coordination from shift to shift.

With the introduction of mechanisation this small team system was no longer readily applicable. The power driven cutters and conveyors needed a long wall face with a much larger number of men involved. Mechanisation also brought with it traditions associated with mass production such as the breakdown of the job into simple operations and the specialisation of workers in particular

operations. This led to a formal division of labour on the basis of one man one task. Those engaged on a particular task (e.g. filling or pulling) formed a self selecting group, but these groups were not bound together in any effective way. Differences in status, pay and interests arose between the groups. This presented problems of coordinating each of the specialised groups both within and between shifts to ensure that the work went on without dislocation over the twenty four cycle.

Thus the coordination of effort which had been a natural function of the work team in the single place system became the responsibility of the supervisors who had previously provided an essentially service function. They now had to direct operations and exercise control. But control is not easily effected through coercive methods under typical mining conditions. Under the traditional system wages were the main means of management control and the attempt was made to continue with this. However, the division of work under mechanisation made this impossibly complicated. In order to use the equipment effectively the shifts were arranged so that different tasks were performed on different shifts. This meant that if those working on one shift were unable for any reason to complete their work for that shift, the next shift would have to complete it before getting on with its own work. But this meant that the members of the oncoming shift were doing work outside their specialised rôle. This involved questions of special payments. These and other contingencies which arose in the mining tasks led to the development of such complications in payment that itemised price lists were prepared. One consequence was that anything not paid for or not listed for payment was neglected. The system of specialisation also meant that if the workers on a shift completed their task ahead of time they had to cease work which was not resumed until the next shift took over.

Trist and his associates call the system which had developed with mechanisation the long wall system. The core of their report is an account of the development of a new system which they call the composite long wall system.

The new system reverted to the principle of an autonomous work team to cover all aspects of the work at the face over all shifts. Since the face was now much longer, the team had to be much bigger. Composite teams of forty-one men were formed to operate the face over all shifts and to be paid on the basis of the team's production. Task rôles were rotated between the members of the teams, so that the conventional specialisation was broken down. This meant that the work could go on continuously. If one shift now got ahead it could begin on the work of the next shift. The teams now had the task of

²⁵*op. cit.*

seeing that all aspects of work were attended to, and the integration which had been the cause of stress and tension for the supervisor, was now looked after by the team. The supervisor, instead of being immersed in the details of production was now able to revert to his service function and to look to such overall questions as future planning.

Under the composite system, productivity rose sharply and tension in the work situation declined. However, it is clear from the report that the establishment of the larger work teams were no simple matter and that difficulties arose and had to be overcome before a smoothly operating system was established.

The authors concluded that there is always a choice as to the type of work organisation that will be employed in association with any given technological organisation. The former is not fixed rigidly by the latter. Some types of work organisation are more appropriate than others in terms of the way people are related to each other and their efforts co-ordinated. Cohesive groups working on holistic tasks seem to be particularly suitable, and there is probably much more scope for their use in industry than is commonly supposed.

IBM Policy

Drucker²⁶ gives an account of IBM personnel policy. Up to 1936 IBM used the orthodox approach of scientific management with norms set by production engineers and bonus rates for performance above the norm. In that year it abandoned incentive payments and put each worker on a fixed wage or salary. Each worker now worked out with his foreman his own rates of production. The outcome of this much more permissive situation was an increased interest by the worker in more efficient production. It was noted that both foremen and workers put more emphasis on training and placement. Finding the job the person could do best, and acquiring skills to do the job better, became the goal of the worker as well as of his supervisor.

Part of IBM policy was to ensure continuity of employment so that there would be no danger of the workers working themselves out of jobs. According to Drucker these workers do not restrict output. He draws attention, however, to two other features of IBM policy. The first he labels job enlargement. The second is the bringing in of the worker on the final stages of the planning of the product.

Job enlargement aims at making each job as big as the circumstances and the ability of the worker permit. Each operation on a job is made as simple as possible, but "each worker is trained to be able to do as many of these operations as possible". Furthermore, "at least one of the tasks the worker is to

²⁶*op. cit.*

perform—machine setting for instance—is always designed so as to require some skill or some judgment, and the range of different operations permits variations in the rhythm with which he works".

The policy of bringing in the workers on the final planning stages of a new product began when, owing to a rush to get a particular item out on the market, production had to begin before the engineering details had been fully worked out. These final details were worked out in the shop with the designers, foreman and workers all collaborating. "The result was a superior design, the production engineering was significantly better, cheaper, faster and each worker, as a result of participating in engineering the product and his work, did a significantly better and more productive job". This then led to the adoption of a policy in which, before the design of a new product is completed the project is handed to a foreman who becomes manager of it. The final details are then worked out by a team consisting of the foreman, the workers who will produce the machines and the designing engineer. The foreman and his workers, together with whatever technical help is required, work out how the job will be done including layout of machinery and assignment of tasks.

It will be apparent that there are common threads running through the four cases described. These may be summarised as:—

1. A policy of pushing decision making downwards so that the worker takes more responsibility for organising his own work.
2. An attitude of expecting a lot from the subordinate in terms of initiative and responsibility.
3. A practice of making jobs as big and varied as is consistent with their efficient performance, thereby giving the worker a less restricted and more challenging task, which will be more conducive to self respect.
4. A policy of building work teams which relate those engaged in a coordinated activity in such a way as to ensure satisfying and mutually supportive relationships.

Likert's Theory of Work Teams

These trends are all away from the principles of scientific management on which mass production assembly lines were based. Likert²⁷ argues persuasively for a new theory of management which would operate on the basis of a tightly knit organisation in which work teams at lower levels in the structure are linked through higher level work teams. As represented on an organisation chart

²⁷*op. cit.*

Likert's system does not differ much from the usual pattern in which each supervisor or executive is responsible for a number of people under him, but functionally it is different in that the supervisors or executives at any level, together with the member of the next higher level to whom they report, constitute a team in which joint planning appropriate to their particular level is carried out. What Likert is seeking to get away from is a man-to-man system of control in which each individual is responsible for a clearly defined area of activity on which he reports directly and as an isolated individual to his immediate superior, who judges him in terms of his performance in this limited rôle. This specialisation of function and limited area of responsibility is the characteristic feature of conventional scientific management. It goes with tight hierarchical control in which decisions are made at the top and orders flow down.

The weakness of the man-to-man system of control lies in the problem of integrating into a coordinated pattern the efforts of the resulting aggregate of individuals that make up the enterprise. There are some very real difficulties to be overcome. The following points are relevant:—

1. There is ample evidence from psychological and sociological research that the tighter the hierarchical control in an organisation in the sense that decisions are made at the top and orders flow down, the greater will tend to be the hostility between subordinates. In autocratic systems subordinates defer to their superiors and fight among themselves for power and status.
2. When subordinates are competing with each other for advancement, and hence for the favour of their superior they tend to be extremely pre-occupied with their personal and sectional interests rather than with the larger purposes of the enterprise. Thus when an ambitious young executive comes into possession of information which might help a rival to perform much more efficiently, he is quite likely to withhold it.
3. The two main ways in which a man rises in the rigidly hierarchical type of organisation is by:
 - (a) making a particularly good showing in his area of responsibility.
 - (b) extending the boundaries of his area of responsibility.
- (a) A person has a better chance of making a good showing if he can get his task defined in a way that sets easier goals. This may involve setting very difficult tasks for other members

of the enterprise. Thus a sales manager has an interest in getting the sales price of the product fixed as low as possible so that his selling task will be easy. However the lower the sales price the more difficult the task of the production manager becomes since he must keep his production costs low enough to ensure a profit. Similar conflicts of interest run right through the enterprise. The conflicting interests of the individuals concerned are likely to lead to mutual suspicion and practices which are not in the interest of the organisation as a whole.

- (b) In a man-to-man system it is necessary to specify clearly the boundaries of responsibility. If a person can extend his boundaries by taking over the functions of others he enlarges his power. The others of course resist such encroachment. One consequence of this is that each section has to build a staff capable of handling peak loads. No one can risk allowing some functions to be taken over by another section on a temporary basis lest it should become permanent. It is therefore impossible to have a flexible system in which sections undergoing slack periods can take up some of the strain of overworked departments.
4. Systems operating on tight hierarchical control require close supervision at all levels if they are to be effective. It has been demonstrated in different situations that when the supervisor in such an organisation is not present work slacks off immediately. In autonomous work teams however the work goes on in much the same way whether the supervisor is present or absent.

The consequences of this are that more supervisors are needed in man-to-man organisations. The notion of span of control is a feature of autocratic systems with tight hierarchical structure. In the type of organisation based on work teams the supervisor performs a service rather than a control function and consequently the limits to the number of men he can supervise are much more elastic.

Competitiveness and hostility with their attendant consequences are not prominent features in organisations based on work teams rather than individuals. When a team as a whole tackles a task appropriate to its level—whether this is in the higher echelons of management or on the workshop floor—a person is evaluated and respected in terms of the extent of his contribution to the team. Such practices as withholding information or related tactics likely to react to the disadvantage of the organisation as a whole are likely to be severely dealt with.

Likert maintains that surveys of American industry reveal that a high proportion of the more successful managers are employing methods which represent a marked departure from the accepted theory of scientific management and a movement in the direction he advocates. The success of these managers is particularly marked if, in assessing their performance, attention is given not only to actual output, but also to such aspects as costs, scrap loss, employee and managerial motivation, labour turnover and absenteeism and job satisfaction. These managers are not following a clearly stated theory but have rather developed working systems which they have found to be effective. The characteristics of such patterns of management is that they integrate the different motivating forces including the economic, social and personal incentives so that they are harnessed in the cause of the productive task. In this they contrast with forms of management in which the economic incentive to produce is opposed to social and personal motives.

He believes that several developments are likely to lead to acceleration of the trend towards the new patterns of management. He argues that:—

1. Increasing competition from other highly developed countries which enjoy advantages in labour and other fixed costs will compel American management to develop the most efficient systems of organisation.
2. The form of social organisation which the highest producing managers are employing will become better understood and more skilfully applied.

3. Changes which are taking place in society are making people less willing to accept pressure and close supervision than has been the case in the past.

4. Increasing education leads to higher aspirations in terms of responsibility and initiative. In democratic countries education systems place emphasis on such values as participation and the exercise of initiative.

5. He and his research team have found an increasing readiness in management circles for a new approach.

6. Whereas traditional management theory was based on the assumption that the hierarchical structure represented a hierarchy of technical expertise in which the superior knew more about the details of the job than his subordinates, a situation is arising in which such assumptions are no longer tenable. With the great increases in research, the growth of new fields of engineering (nuclear, electronics, missiles and plastics), the use of complex forms of mathematics and statistics and the use of large computers it is quite common for subordinates to know more about important matters than their superiors. Furthermore, the problems are so complex that no one person is likely to have all the relevant information for making decisions. This means an increasing need for cooperation and participation.

SECTION 5. A REVIEW AND EVALUATION

The accumulating evidence, some of which has been outlined in the preceding section, points the way to a new approach to the management of men. The key concept in this new orientation is that of the socio-technical system.

Earlier attempts at establishing sets of rules for the organisation of workers in industry failed to do justice to the complexity of the factors involved. The scientific management approach advocated by Taylor and others tended to put all the emphasis on the technological aspect and to regard the worker as a mere extension of the machine he operated. Elton Mayo and his fellow sociologists at Harvard set about redressing the balance by emphasising the distinctly human qualities and needs of the worker, and showing how relevant these were if full use was to be made of the technological resources. This contribution was valuable and timely, but in making it there was a tendency to lose sight of the work that had to be done.

The emerging orientation is less doctrinaire and more pragmatic. It focuses on the task to be performed and is concerned with finding the most effective way of organising and using the available resources for getting it done. Thus, if we consider just one aspect of organisation concerned with the controversy over centralisation or decentralisation, it would seem that, depending on the nature of the task, the available technology and prevailing conditions, a tightly controlled authoritarian type of structure may be most appropriate in some types of situation, while in others a loosely knit organisation with considerable autonomy for subdivisions and sections may be the most adequate. Ordinarily, where a failure or false move by a relatively junior member of the work force can jeopardise the existence of the whole concern, strict centralised control seems required, while decentralisation and sectional autonomy are called for where initiative is needed and mistakes and errors of judgment are

not likely to have very adverse effects on other parts of the enterprise. Thus centralised control and strict discipline would seem to be appropriate in the case of a submarine crew, but likely to be very inefficient in the running of a retail store with many departments.

The notion that the work organisation should be arrived at by an analysis of the work to be done and the resources available to do it may seem a simple and obvious one. The question may be raised as to how this principle can contribute anything to the solution of managerial problems. Yet in making this explicit Trist and his associates have opened a new horizon for management.

It is always easy to fall into the belief that the customary way of doing things is the best or only way. Thus it has become traditional that mechanisation requires specialisation and the division of labour. Yet it was demonstrated both in the Ahmadabad textile mill and on the North-west Durham coal face that not only is this untrue, but that unnecessary specialisation can be grossly inefficient. It seems highly probable that in many phases of industry opportunities exist for the reorganisation

of work along lines which would increase output and at the same time provide the workers with more interesting and satisfying rôles.

Supervisors are often exhorted to cultivate good relations with the workers by keeping in mind that they are human beings deserving of courtesy and consideration. However, where the work organisation is such that the supervisor has to push and drive to keep the work up to schedule, where he is constantly being called upon to clear bottle necks or straighten out difficulties and where he is kept in a relatively high state of tension, it is quite unrealistic to make such demands of him. It is the function of good organisation to ensure that all those engaged in getting the work done should be so related to each other that, in the ordinary course of events, their interaction is friendly, cooperative and mutually satisfying.

There appears to be no simple formula for achieving such an organisation. However an approach which takes into consideration both the material features of the situation and the pattern of social forces and motivating factors is likely to find an effective solution.

PART II. INNOVATION

Throughout the world at the present time rapid technological changes and developments are taking place. However, the time lag between the invention or development of a new process or technique and its full adoption by those engaged in production is considerable even under the most favourable circumstances. Where conditions are unfavourable the lag may be very protracted.

There can be little doubt that the most effective single way to increase economic achievement is to speed up the rate at which new and improved techniques and practices are adopted. The greatest scope for improvement obviously lies in the underdeveloped countries which are still employing primitive and inefficient methods. However, at any given time there is considerable opportunity in all countries for more effective use of available information and techniques.

It is estimated that the average American farmer in 1820 supported four others besides himself. By 1940 the figure was twelve and by 1961 it was twenty-seven. However it is also estimated that if he adopted already developed innovations the figure would be fifty. One of the most clearly successful innovations in modern farming was the introduction of hybrid seed corn in the corn growing belt of the middle west of the United States. Investigation revealed that it took over fourteen years for it to reach complete adoption in Iowa.

Lag in the adoption of established advances in technology have been studied particularly in the field of primary production, but studies in other areas of activity indicate that it is a general phenomenon. There was, for instance, a forty year time lag between the first success of the tunnel oven in the pottery industry and its general use.

Rogers²⁸ has provided the first comprehensive survey of the diffusion of innovations as this has been studied in many different fields (e.g. medical, rural, industrial) and covering subjects ranging from the use of fertilisers or weed sprays to the adoption of birth control methods, from the use of new drugs by medical practitioners to new techniques of cotton spinning in textile mills.

Certain conclusions can be drawn from the mass of studies in this field. It is apparent that new ideas and techniques percolate through a social system at a faster or slower rate depending upon many social processes which influence attitudes and behaviour.

²⁸Rogers, E. M., "Diffusion of Innovations", New York: The Free Press of Glencoe, 1962.

Receptivity to a new idea varies from one community to another in accordance with its compatibility to the prevailing sets of values and beliefs, and with the extent to which the nature and social structure of the community facilitates the flow of communication.

Rural sociology provides some of the best studies of diffusion of innovations. According to Rogers, some 286 such studies had been carried out by 1961. However, the findings from the rural field are very similar to those emerging quite independently in other areas. The same basic principles seem to apply to the adoption of new ideas.

A contrast may be drawn between a traditional orientation and a progressive one. It will serve to illustrate the difference if we compare two types of farm family likely to be encountered in western society.

The progressive farmer tends to live on a farm of above average size for its locality. He will be busy and businesslike. He will expect a caller to make an appointment by telephone. He is likely to hold some responsible position in the local farmers' cooperative or other formal organisation. He is most likely to be between 30 and 50 and probably nearer the former. He will have had a good education perhaps including some advanced work in agriculture. His wife will dress in urban fashion, and the children will be friendly and at ease with the visitor. They are used to seeing strangers in the house. The family will have travelled to other parts of the country and will regularly have a vacation away from home. Close family friends are not drawn from the immediate neighbourhood, but from people in town who are not farmers or from a wider area. Neighbouring farmers are likely to drop in for some advice on farming problems.

The progressive farmer is likely to keep accurate farm accounts, to subscribe to a number of periodicals that deal with farm technology, to have a fairly regular schedule of work with time set aside for such matters as keeping records up to date or reading. He keeps in contact with the local extension agents. He may have some special interest such as breeding a particular strain of stock.

The farmer who is dominated by tradition differs from the progressive on all these points. He is older, less educated and completely immersed in the local society. It is inconceivable to him that his friends should be anyone other than his near neighbours. His range of reading is limited. He keeps no accounts. His farm buildings are falling into disrepair. He

always has work to do and usually feels he is working very hard. He has very poor organisation or system so that his work always seems to be on top of him. He never has time to take a vacation even if he could afford one. His wife is untidily dressed. The children are shy. They are not used to having visitors. One or both parents of either husband or wife may live on the farm and exert considerable influence.

The traditional farmer has no direct contact with the extension agent though he may attend demonstrations or field days at which he will keep in the background. He probably will not have direct contact with the very progressive farmer either. When he wants some advice on farming matters he will go to some intermediate farmer who has contact with the most progressive farmer.

In Roger's terms the progressive farmer is "more technologically competent, cosmopolite, educated, economically rational and empathetic". By the term empathy, Rogers apparently means a capacity to understand and appreciate other ways of thinking than his own. Emery and Oeser²⁹ give a detailed account of differences between more progressive and less progressive sheep farmers in South Eastern Australia in terms that are similar to those of Rogers. They use the concept of "urbanisation" to distinguish between the two types, because they found that farmers who had spent some time in an urban environment had a wider and more cosmopolitan outlook than those who had lived all their lives in the restricted rural community. All studies on the adoption of innovations that have taken cognisance of the modern-traditional dimension are in agreement that innovativeness goes with the modern outlook.

The adoption of new ideas in a social system—whether this is industrial, medical, rural or in some other area of activity—follows a standard pattern. One or other progressive member of the system tries out the new idea and others follow in a stepwise pattern. Among the earlier adopters are those with somewhat similar outlooks and interests to the innovator, then follows a group of fairly progressive members who are followed by other groups until even the laggards have fallen into line. Those who are first to adopt the new techniques reap whatever economic rewards are to be obtained if the innovation is successful, for their output goes up or their costs go down at a time when those of their competitors are remaining relatively stationary. As everyone comes to adopt the new practice prices are forced down by the increased production. In this context it is an interesting point that when innovations are introduced into underdeveloped countries the first to use

²⁹Emery, F. E., and Oeser, O. A., "Information, Decision and Action: A Study of Determinants of Changes in Farming Techniques", Melbourne University Press, 1958.

them are likely to be the wealthier and better educated while among the last will be the illiterate and impoverished. The consequence that the rich get richer and the poor get poorer does not usually endear the agents who introduce the innovation to the population of the underdeveloped areas.

The typical features of the adoption of an innovation can be illustrated by reference to the rural scene where it has been studied in most detail. At first one or two progressive farmers learn about the innovation. They are likely to get their first information on it from some form of mass media (e.g. an agricultural journal to which they subscribe). They notice the report or account because they are always on the alert looking for such ideas. Having become aware of it they then seek what information they can obtain about it preferably through scientists or extension workers with whom they have personal contact. If the innovation looks promising the next step is to have a trial run on a very small scale. If all goes well it is tried again on a larger scale, but still somewhat tentatively. It may be necessary to adapt the technique to suit the local conditions. When the advantages have been established the new procedure is used on a full scale basis. In the meantime others among the relatively progressive farmers may be taking note, but waiting to see what happens. If the innovator (the first to adopt the idea) has success, a few others may follow him the next year. They will be the people who are in relatively close contact with him. If all goes well others in contact with them will try it the following year and over the next few years the innovation will spread along the lines of social contact.

The chain of personal contact is important. It occasionally occurs that there is a discontinuity in a system so that there are two distinct groups with virtually no personal interaction across the boundaries of the separate groups. Rogers quotes a study by Van de Ven on the diffusion of artificial dairy breeding in one Netherlands village. "A few modern farmers pioneered in adopting the new idea, and their followers adopted soon after. But then the rate of adoption seemed to plateau as the majority of traditional farmers did not adopt. Van de Ven found there were almost no visiting relationships between the modern and traditional farmers. It was as if each lived in a separate social system rather than the same community".³⁰

This personal contact seems to be of major importance when decisions are to be taken and ideas carried into practice. There are risks in trying something new and the individual concerned usually wants to have an opportunity to raise questions about aspects on which he is not sure or about

³⁰*op. cit.* p. 67.

which he is worried. He can only do this satisfactorily in a face-to-face situation and with someone whose interests and ways of thinking are sufficiently close to his own to ensure adequate communication. Furthermore a person is likely to feel that a particular innovation may be quite appropriate for someone else who is perhaps operating on a larger scale or whom he regards as belonging to a different class, but be quite inappropriate for his own situation. It is only when he sees someone, with whom he tends to identify himself adopt the innovation that he perceives it as a practical issue for himself. This accounts for the importance of social interlinkage. For the ideas which are evolved in the minds and laboratories of scientists to be put into practice in the various highways and byways of life, it is necessary to have a connecting social chain from the laboratory to the farm or factory. In many countries this link is supplied through extension officers or applied scientists who have considerable contact with the more scientifically oriented farmers or other entrepreneurs. These in their turn have links and contacts with others a little lower down the scientific continuum and they in their turn with others further down still.

It is obviously of great importance to ensure there are no discontinuities in the chain. This is a serious problem when there are barriers of culture, caste, race or class to be overcome. It is a problem in any society with a distinctly hierarchical structure which restricts the easy flow of communication.

The studies of diffusion of innovations are essentially studies of the communication process. They throw an interesting light on the barriers to it and demonstrate that communication involves something more than the transmission of symbols. People are something more than segregated units which respond independently to defined stimuli. Rather

they can be thought of as nodes in an interconnected network of relationships. These relationships give meaning and stability to the world in which they live. In an important sense they define reality, shape beliefs and mould values.

The person who would influence the behaviour of another must take cognisance of the way in which that particular individual is related to others. If he wishes to influence the behaviour of a group of people he must give attention both to the pattern of relationships which exist between them, internal to the group, and also to the way in which as a group they are related to the wider community. The particular strategy which is to be employed in enlisting cooperation in the direction of change will vary according to the circumstances and, in particular, to the degree of control over the variables in the situation possessed by the individual seeking to effect change.

In the typical situation investigated in studies of the diffusion of new ideas the change agent has little control over the variables that are relevant to the adoption of the innovation. He is usually in no position to bring about direct changes in the environment or work situation, or in the network of relationships which prevail. He has to take the situation as it is and work through the existing structure. In these circumstances time and effort are most appropriately spent in endeavouring to bring about changes in the outlook and orientation of those members of the community who are most influential in the area of activity in which change is desired. Once these influential persons have been won over and have adopted the innovation, other members of the community will gradually follow suit. However, when low status members of the community are induced to adopt the innovation first, it is by no means certain that higher status members will follow their example.

PART III. RELEVANCE TO THE IRISH SCENE

It is not intended to discuss the Irish scene in any detail. The writer is not sufficiently informed on events in Ireland to make more than general comments and to illustrate, by reference to local conditions, the position developed in earlier sections.

Industry in this country is taking shape in an era in which the harsh conditions that alienated labour from management have been vastly changed. This, combined with the relatively small size of most Irish firms, confers advantages. In particular there are opportunities for developing a strong team spirit and sense of partnership. This is most likely to be achieved if good communication can be established between management and workers. Geary³¹ has suggested a way in which employees might be kept informed on the progress of the enterprise. More general information of relevance to the success of the business such as market conditions, or even information on such matters as the destination and use of the product might be made available through such simple devices as noticeboards or newsheets. People like to know how their efforts and activities fit into the larger scheme of things. The exchange of information internal to the enterprise and opportunities for communication upwards from the workroom floor also need to be provided.

It is not suggested that any single activity will produce profound results. The important matter is the total climate of work relationships which is built up. There seem to be dangers in Ireland that some growing enterprises in their efforts for efficiency are repeating the pattern common in more heavily industrialised countries thirty or more years ago. The writer has heard accounts of firms which use incentive payments based on time studies and in which there is repeated reorganisation of the work process in the effort towards higher production. The workers in these plants are reputed to be highly anxious and to have developed considerable fear of changes to which they may not be able to measure up. Situations of this sort are highly conducive to resistance to change, restriction of output and high labour turnover.

However, although there will be considerable scope for the application of findings from studies of relations in industry in other countries to Irish secondary industry, the most interesting field for the study of work organisation in Ireland lies in the

rural scene. There seems little question that all is not well in the countryside.

O'Mahony³² commenting on industrial relations in Ireland, says:

"We cannot exclude agriculture from a survey of industrial relations. An industrial relations situation exists on the farms—even where 'hired' labour is not employed. Indeed one of the most difficult of all labour-management problems is to be encountered in the family farm where there is no hired labour. The industrial relations aspect of agriculture has received very little attention, probably because it does not normally make the newspaper headlines, but it presents a vital and serious problem which will become increasingly important".

O'Mahony is here concerned with the consequences to production of prevailing arrangements on farms. Rural production in Ireland has been relatively stationary for some years while the number of those engaged in agriculture has been declining. Some changes in land usage which are taking place do not seem to be conducive to higher productivity or to the building up of a rigorous rural community.

The impression gained from census data and sociological reports is that the typical Irish farmer is a man who has worked on his father's farm in a state of dependency until middle age or later when the father dies and he steps into his shoes. He marries late, if at all, because there is no place for two families on the farm. When he is young he has little opportunity to show initiative or enterprise. When the opportunity does come with ownership of the land he is likely to be too old, too set in his ways and too lacking in incentive to aim at more than the maintenance of the standards to which he has become accustomed. In his turn he will cling to his farm and work it with the unpaid assistance of his son or sons, if he has any, until death comes.

It is not surprising if young men find the prospect of staying on the farm unattractive, particularly when it is small and prefer to seek their fortunes in the affluent societies across the seas. Where this happens the farmer carries on alone until he dies. The farm is then left to an heir who does not return to work it, but sells or leases it. The buyer is usually a farmer who adds it to his own holding

³¹Geary, R. C. "The Irish Woollen and Worsted Industry 1946-59: A Study in Statistical Method", The Economic Research Institute, Paper No. 7, p. 18.

³²O'Mahony, David, "Industrial Relations in Ireland: The Background", The Economic Research Institute, Paper No. 19, p. 7.

using it for pasture with a consequent trend towards extensive patterns of land usage.

Modern farming demands energy, enterprise and a well informed modern outlook. From the point of view of efficient use of the land, the ideal farmer would seem to be a man of between twenty-five and forty with a secondary education and some experience of urban life, happily married with a young family. Such a man is likely to have the strength, energy and motivation to get the necessary work done. He has a future to plan and work for. He can be expected to have the information on which to make sound decisions and the foresight to see the value of increased expenditure in terms of increasing returns. He will have a modern approach to such matters as the use of credit and cooperatives. He will provide a suitable education and training for a successor to whom he will hand over control when he reaches an age to retire.

However the available statistics suggest that this ideal is rarely attained in Ireland. The 1951 census figures³³ suggest that advancing age and bachelor status are prevalent.

Age: Of male farmers almost half were 55 years of age or more (99,733 under 55, 99,672 55 years of age or over). If female farm owners are included the balance is tipped very much in favour of age, the respective figures being 109,276 and 126,109. Some 55,838 male farmers and 16,720 female farmers were 65 years of age or older.

Marriage: More than one-third of male farmers between the ages of 20 and 54 were unmarried (35,624 unmarried to 61,986 married with 1,833 widowed). It should be noted that 31,461 of the married farmers under the age of 55 were in the age group 45 to 54. This left a total of 30,525 married male farmers between the ages of 20 and 44 for the whole country, or some 13% of all farmers.

While the marriage situation for farm owners presents a depressing picture, the situation for sons and other male relatives assisting on the home farm is much more dismal. Of a total of 80,632 sons and sons-in-law between the ages of 20 and 54 working on the parent's farm, 74,921 or some 93% were unmarried. Of a total of 100,516 male relatives of all kinds within the same age range, 93,698 were unmarried.

The statistics are somewhat out of date and it will be interesting to see the results of the more recent census. However the general picture does not seem to have changed radically. McNab³⁴ fills in with more detail the picture presented by the statistics in a report on rural Limerick:

³³Census of Population, Vol. II, Part II, 1951.

³⁴McNab, Patrick, Limerick Rural Survey, Interim Report, July, 1960 Migration. Tipperary Muintir na Tíre, p. 30.

"Marriage is more difficult for farmers' sons than for labourers, because of the tradition that a son may not bring a wife into the home farm until the other members of the family are provided for and that his prospective wife must bring along sufficient money to pay off the parents and other adult members of the family remaining on the farm. Furthermore there is no fixed system of inheritance and, if more than one son remains on the farm, all have equal rights until the death of the father decides who shall inherit. The price of land is so inflated in this country that only very wealthy farmers can solve the problem by setting their sons on other farms. Small farms which come on the market are usually bought by wealthy farmers at grossly inflated prices. The farm house is then unroofed and the farm used for drystock grazing. The evil effects of this pattern are cumulative; because of the low migration rate among farmers' sons, too many farms have an excess of adult sons; the bad system of inheritance condemns them to remain dependent until the parents die and prevents them from marrying, if at all, until late in life. Since they are not paid for their work they are a cheap substitute for hired labour and thus have a bad effect on the labour market. Usually, if the parents live to a ripe old age, the inheritor does not marry, but steps into his father's shoes and his brothers continue to serve him as they did his father. In any case where there is more than one brother or some sisters living on the farm, the father wills it in such a way that the inheritor cannot get rid of them without selling the farm. There is an understandable reluctance on the part of girls to marry farmers who have dependent relatives".

While the sons of the farmer tend both to remain single and to stay on the farm, the sons of the farm labourer are more likely to marry and to emigrate. According to McNab³⁵ "Among males, farm labourers tend to consider work on farms as a purely temporary job prior to migration". He expresses concern about the possible consequences³⁶:

"Local opinion has it . . . that a higher proportion of farm labourers than farmers or farmers' sons marry and that farm labourers tend to marry younger. The only barrier to marriage among farm labourers is the difficulty of getting a permanent job with adequate pay. That many of them do marry on low wages reflects their low and even primitive standard of living. There are indications, particularly in recent times, that even family ties do not hold

³⁵*op. cit.* p. 21.

³⁶*op. cit.* p. 21.

the farm labourer. Since 1956 an increasing number of married labourers emigrated leaving their wives and families behind. In some cases the family followed when the husband got permanent employment abroad, but it is more usual for the older children to join the father when they leave school, the intention being for the father to return when all the children have been provided for. Although the instances of this are not so frequent as to constitute a trend, yet if it should develop it would be a greater threat to the rural community than the migration of single people. Children would have two homes and migration at the age of 14 would become automatic among the rural working class. The rural labour force, already dangerously low, would be completely wiped out. If the marriage rate among farmers is low and, if the strong taboo against farmers' sons working for hire persists, it is difficult to see how the rural communities of County Limerick can remain vital".

Vercrujisse³⁷ confirms this tendency for the rural labourers to emigrate. Conditions for young people who stay in the rural areas under present conditions are, in McNab's words: "hopelessly limited and unrewarding". Since conditions in England and elsewhere are favourable, the labourer, with little to leave or lose, emigrates. Farmers' sons with more to tie them to the land are less mobile. Coyne³⁸ however, makes the point that there is considerable emigration from small farms of less than 15 acres.

So far as can be ascertained from the available statistics and reports the rural scene presents an unhappy and, at least in some ways, deteriorating picture. The prospects for the young people are unpromising, much of the land is in the hands of people too old, too lacking in incentive and too tradition bound to make the fullest use of it; the excess of sons on some farms and the death of competent agricultural labourers results in a poor distribution of the work force on the land so that, while on some farms there is an excess, on other farms there is a shortage of labour; the high rate of emigration among girls who have little to hope for in the rural areas reduces the social life and contributes to the low marriage rate in a society where strong class distinctions restrict the possible choices of spouses; these same class distinctions not only restrict the effective use of the available labour force, but inhibit communication and cooperation.

In terms of socio-technical systems the prevailing situation seems to be badly adapted to the

³⁷Vercrujisse, E. V. W., Shannon Hinterland Survey, 1961, Preliminary Report, Leyden University.

³⁸Coyne, E. J., The Small Farm in Irish Agriculture, Article in Studies, Spring 1958, Dublin, Talbot Press.

task. The people who work the land are not related to each other, and to the material factors, in such a way as to either fulfil their own potential as persons or to make the most effective use of the available land.

The current situation would seem to be an unstable one. Rising living standards together with greater exposure to urban and cosmopolitan values, particularly through the medium of television, seems likely to accentuate tensions between the younger and older generations. This may lead to continued and even accelerated emigration from the rural areas, or it could result in a reorganisation of relationships which would provide more scope and opportunity and a fuller life for the young people.

An issue of particular concern is the optimum size of the family farm. This is a complex question with many issues involved including the quality of the land and the nature of the market. From the point of view of national policy which aims at building up a strong rural population, it is obviously desirable that holdings should be as small as is consistent with the provision of an income adequate to maintain a healthy and self-respecting way of life. The ideal would seem to be pattern of land usage comparable to that of such countries as Denmark and Holland with intensive cultivation of small farms. However, as Coyne³⁹ points out, the existence of large concentrations of population based on secondary industry in these countries creates a very different situation from that prevailing in Ireland.

While it is in the national interest to aim at maximum output per unit of land, it tends to be in the interest of individuals to aim at maximum output per unit of labour. There is some suggestion that current trends are more in line with this latter goal. It is possible for one man with modern farm machinery, to farm an area in excess of one hundred acres with considerable efficiency provided that a substantial portion of the land is used for pasture. Farmers operating on this basis appear to be doing well. If the practice of buying small farms as they become vacant and adding them to existing farms continues, it may well be that the bulk of the land will come into the hands of a relatively small number of competent farmers using a high degree of mechanisation and enjoying a high income. This would resolve some of the current problems, but would denude the countryside of its population.

It is this writer's impression that any adequate solution must tend to move away from the concept of the individual farm as a completely isolated and self-contained unit. Some measure of integration of groups of neighbouring farms to allow for a pooling and more effective use of such resources as labour,

³⁹*op. cit.*

knowhow and machinery would offer considerable advantages.

However it is not the purpose of this paper to argue for any particular way of dealing with the position. Indeed it is a central element in the argument presented that the work organisation in any particular situation must be determined from a careful analysis of the work to be done and the resources available to do it. This would require an on the spot exploration of the situation with the very active participation of those who have to do the work. Solutions imposed from outside or above

are not likely to evoke active cooperation. The task for the rural social worker seems to be to help the members of the local community to become more fully conscious of the factors which are determining their present situation and the alternative choices which confront them. Above all it is important that those concerned come to appreciate that their social organisation is not something imposed on them by forces beyond their control, but that they do indeed within limits have a choice. In so far as this can be achieved the people most concerned are likely to choose wisely.

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