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RESISTANCE TO TECHNOLOGICAL CHANGE(*)

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SVMMARIVM — Ex factis quae ipse observavit, Auctor quaedam exponit, quae negligi nequeunt, si quis velit quaerere causas quibus introductio novorum repertorum technicorum in aliquam officinam bene vel male succedat.

1. Successive industrial revolutions have caused so many changes in the methods of producing goods and in technologies and the relations and forms of cooperation involved, that not only the job but also the very social life of the individual, outside his place of work, has been strongly affected by them. His leisure time, his cultural trends, his family relations all have been more or less influenced by the change he has experienced in his work environment. On the other hand, change has not only occurred in the machinery of production but also in means of transport, communication and consumption structure. It is particularly change in the latter which have largely contributed to that mechanization of leisure, which is at the basis of what FRIEDMANN (1) calls « technical environment », as opposed to « natural environment », or the environment of societies which have used, or are still using, machines driven exclusively by natural energy. At least we can say that fundamental changes, more or less linked to technological innovations, have

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(1) FRIEDMANN G.: *Technological change and human relations*. « The Brit. J. of Sociol. », 1952, 2, 95-116.

occurred at a very quick rate in modern society, and that they have permeated man's entire life.

2. As far as the subjective attitudes towards change are concerned, i.e. the human reaction (how individuals perceive it, whether or not they are enthusiastic, where they rightly appreciate the advantages or disadvantages it brings with it), one of the most striking phenomena is that of « resistance to change ». At the last Congress of Applied Psychology, in Paris, Mr. GOGUELIN, in his valuable paper, on « Psychological Factors capable of Increasing Productivity in a firm » quoted certain instances as evidence that workers' comments on changes facing them very often indicate a passive evaluation, if not resistance. The saying that « people offer resistance to change » has even become commonplace.

That there is a « resistance to change » — or, to limit our field ⁽¹⁾ — « a resistance to technological changes » becomes evident whenever an innovation in industry has to be faced. Even the transfer of a worker from one job to another, which may at times also be the result of innovations, may meet with resistance for the following reasons: man is becoming less and less called upon to participate with his creative mind in his activities, and, as FRIEDMANN points out, to be aware of the materials he deals with; fear of decrease of income or loss of qualification; replacement of acquired habits and difficulties of readjustment; the way change is presented to him; the lack of previous information and ensuing feeling of insecurity; prejudices or rumours; structure of the team-work and degree of homogeneity of the group to which he belongs.

This list is far from exhausting the possible causes or explanations of resistance to change, but it comprises the main points emphasised, so far, by research workers in the field and refers mainly to the objective way change affects individuals and groups.

3. There is, nevertheless, another approach to the problem which puts the emphasis on the motivational aspect of resistance to change. RONKEN and LAWRENCE ⁽²⁾ show that is not enough to say « people tend to resist

⁽¹⁾ The cultural aspect of technical change have been recently treated in: « Cultural patterns and technical change », manual prepared by The World Federation for Mental Health and edited by Margaret Mead, the New American Library, 1955.

⁽²⁾ RONKEN H. O. and LAWRENCE P. R.: *Administering changes*. A case study of human relations in a factory, Harvard University - Graduate School of Business Administration, Boston 1952.

change », or that some workers are uncooperative and so on. They stress the fact that the investigators need to find out the social processes in which these problems are embedded. According to them, technology is not dissociated from the behaviour of people, there is not a « world of people » and a « world of technology »; technology not only represents tools, machines, products, but also a form of behaviour in a social system, that is in the factory. Put in these terms technical changes become primarily changes in the activities of people, which in turn affect and are affected by the feelings, interactions and evaluations of themselves as well as of fellow human beings. The research of the above mentioned authors show that the effects of technological changes are not confined to technical materials but are critical largely through their effect on inter-personal relationship, to which people react more than to physical, tangible, external changes. Changes appear as mutually dependent elements of behaviour of a social system in a relation of mutual dependence to an environment. Other authors, such as COCH and FRENCH ⁽¹⁾, emphasize that re-learning after transfer to a new job is so often slower than initial learning, and the efficiency rating of workers prior to change does not indicate a faster or a slower recovery rate after change. On the basis of these findings, COCH and FRENCH consider resistance to change rather a motivational problem. Actually it seems that the rule is not resistance to change, but rather « acceptance of change ». People are changing continually in some cases slowly, in others quickly: customs, tools, food, idioms become different in the course of time. On the other hand, change has been advocated as a remedy to monotony by WYATT, VERNON and others. Monotony ensues from repetitive work, or, as GEMELLI ⁽²⁾ points out, from the division of certain operations into a series of independent and excessively simple movements, which give a rather artificial character to the work and subtract any meaning from it. Lack of variety is, of course, different from technological change, but the latter is generally brought about in a way that emphasises the former, especially when considering changes carried out in the so-called « technical environment ».

On the basis of these contributions to the problem, it seems to me that resistance to change is connected with different factors, such as its objective consequences, the social system in which it occurs, workers' motivations. To

⁽¹⁾ COCH L. and FRENCH J.R.P., Jr.: *Overcoming resistance to change*. Human Relations, 1948, 1; 512-532.

⁽²⁾ GEMELLI A.: *L'operaio nell'industria moderna*. Vita e Pensiero, Milano, 1946.

investigate it means not only to investigate the individuals' attitude by questionnaire or interviews, or to measure their output, turnover or absenteeism, but also to explore the whole situation, the interactions of different groups in the plants. At least « resistance to change » is a specific problem in each situation in which it occurs, and must be understood in specific terms. Moreover it is a symptom of something wrong in the situation. SPICER ⁽¹⁾ says that resistance must be seen as a symptom of special conditions rather than as a constant element. So it becomes also possible, through the study of cases in which resistance appears, to discover causes of success and failure.

4. Evidence recently collected may further implement the above. When measures and adequate presentation are taken to introduce an important technological innovation in a factory so that the workers directly involved do not feel threatened by the change itself (fear of unemployment, down-grading, etc.), cases can be found where workers do not offer resistance. Nevertheless more or less favourable attitudes towards the change in question may not be simultaneous but may vary in degree, according to the different groups of workers. In collaboration I met such a case in a factory where an important technological change had taken place. Unfavourable reactions came more from those workers who had not been personally affected by it than by who had. In other words, unfavourable attitudes seemed to increase, while the percentages of favourable attitudes diminished, as we passed from workers directly affected to those who had been indirectly affected by the change, that is to those workers at stages further off, not close to the place where change had been faced.

How can we explain this reaction of the indirectly affected people, if we limit ourselves to the specific concept of « resistance to change »? As an unfavourable attitude is a kind of resistance, are these workers more « resistant » to the change, than those directly affected by it and are actually changing their ways of working?

The indirectly affected workers did not need to re-learn anything. They were subjected neither to change in their place of work, nor in their way of work, except those, who might have experienced a certain increase in its volume but also a rise in wages. It does not seem justified to impute their

⁽¹⁾ SPICER E. H.: *Human problems in technological change*. Russell Sage Foundation, New York, 1952.

reaction simply to the fact that some objective consequences of the change had been felt by these workers.

In explaining these findings the following circumstances must be taken into consideration.

a) When a change is planned and presented to the worker in a way he can easily accept, and when it actually represents an improvement in his conditions of work, the favourable attitudes which arise from the fact that he can easily, and all the time, compare objectively, his present task with his past work counterbalances the unfavourable attitudes arising from other aspects of the change.

b) The favourable attitudes of workers, who are only able to realise the benefits which their mates and not themselves derive from the change, are insufficient to balance the unfavourable attitude arising from it because of fear of unemployment, loss of prestige, need of re-learning, etc.

c) Unfavourable attitudes are all the more numerous and more difficult to balance with favourable ones, when general tension and negative attitudes of the workers towards the problems in the factory, where the change has taken place, are stronger.

d) When they are confronted by group standards and we-feeling they are directly related to more general tensions; if the climate of the factory is somewhat tense, they act upon the single members of the groups, and increase the intensity of the unfavourable attitudes. In fact, in the above mentioned case, people who were directly affected by the technological change, were also separated from each other, because of the requirements of the change itself. Only a small amount of them remained at their old place of work and the formation of favourable attitudes appeared to be determined not only by personal experience in improved conditions of operations, but also by the dissolution of the old grouping, and the formation of a new and generally better qualified one.

On the other hand, the unfavourable attitudes of the indirectly affected workers also seemed to be caused by the fact that their grouping was not different from the one before the change, in fact, they belonged to the same grouping before and after the change ⁽¹⁾. Thus they felt strongly the pres-

⁽¹⁾ COCH and FRENCH, in their paper, show that the group standards and we-feeling play an important part also on the directly affected workers, when the grouping is the same before and after the change, with effects on the percentage of unfavourable attitudes similar to those described here.

sure of their group standards and of the we-feeling, which could only occasionally be related to the change, but were rather the expression of a more general state of the relationships inside the plant.

5. The facts and the hypothesis so far described are still to be controlled and assessed. They are neither conclusive, nor exhaustive of all the possible variables related to the problem. Nevertheless they seem to suggest an opportunity for studying the questions related to technological change not in terms of « resistance » to it, but in a larger perspective. Change is not only a specific problem in itself, which can be solved in terms of communications, joint consultations, incentives, etc. It is also closely related to the more general problems in the plant, and therefore communications, joint consultations, workers security, as well as all other problems of a general order, must also be taken into proper consideration.

If all these are not suitably dealt with, there is always a risk of meeting or even creating unfavourable attitudes which are apparently an expression of resistance to a specific change in the plant, whilst, in reality, their cause lies somewhere else.