A common scientific background for the participatory approach ?

Ilkka Kuorinka

Introduction

Participation - however we define it – is observable and has been analysed in a scientific framework, but has seldom been designed *a priori* on the basis of a specific model or paradigm. It is as if life itself produced a rich and diverse form of participation, and then scientists come with their questionnaires to dissect it like a butterfly held by a pin.

In this article, participation is examined first in the framework of occupational safety and health.

Arguably, any answer to the title question about a "common scientific background" is fated to be fragmented, and so a weak aid to decision on strategies for participation. Before moving to implementation, the goal of the desired participation must first be decided. A strategy to strengthen the influence of trade unions is totally different from a strategy to increase employee participation in planning and design in a company. The former goal is political, the latter organizational.

From an historical perspective, the baseline for the investigation into participation at work could be set at any point in the time scale. Entirely arbitrarily, I have taken the report of a preparatory committee for a "Direct Workers' Participation in Matters of Work Safety and Health" conference. The conference was to be held in Italy in 1982, organised by the Vienna Centre (later the European centre for social welfare policy and research) and the Institute of Psychology (Italy).

The preparatory committee's report is interesting in that it drew experts from many European countries together in a bid to outline the topical area of participation, exactly as we are doing today.

A first observation on the report is that it (and the following conference) seem to have been inspired by the anti-Taylorist debate of the 1960s and 1970s. However, it is accepted that in the future, "microelectronics" will become important and will change the technical and organisational parameters (at work).

However, the preparatory group states that important questions in the future will be job enrichment, job enlargement and autonomous groups, but will then move on to the "Italian approach" presented by the Italian Metal Workers' Federation (and "intellectuals"). The elements of the Italian approach were mainly the physical work environment and physical and mental workload. The approach also refuses to delegate health issues to other groups or institutions (other than trade unions). The report also notes that trade union participation is limited to "homogenous worker groups", i.e., a department, an assembly line, etc. Individual participation was not approved.

After discussing the Italian approach, the group cited the experience of three other European countries. In **West Germany**, the government was reported as promoting participatory structures in the field of work safety. The trade unions emphasised primary prevention (of accidents). In **Norway**, the framework was institutional : labour market authorities, labour inspection and work research institutions were seen as the main actors. **French** sources reported that responsibilities concerning participation were scattered in France. The French representative found that scientific positivism was a major obstacle. French trade unions dislike organisational structures and emphasise the role of strike action. Also, any worker participation had to be accompanied by the necessary scientific instruments. A few comments on legislation in other European countries and in the Eastern Bloc were presented.

We do not know whether the report reflects European views in general, and certainly some countries' views are missing, e.g., Scandinavia (other than Norway), the U.K. and the Eastern Bloc. Some conclusions may be drawn, however.

First, the report shows that twenty years ago, the idea of participation was not really a big issue among trade unions and work scientists (except perhaps for the sociologists who examined it in a context of democratisation). The fact that today's conference is discussing "user-oriented strategies" shows that attitudes may have moved on.

Second, the interests of the various actors were manifestly very far apart. Where one actor underlined the physical work factors, another focused on bureaucratic controls, and a third *de facto* rejected all forms of participation.

As a final conclusion of the above, it might be said that even if approaches to participation as such have evolved, the cultural divergences in European work life may still be very wide.

The nature of participation

Participation as an everyday, vernacular concept is weak and far too broad and may not be useful in understanding participation as a means of improving work and working conditions.

Participation and collaboration are closely-related concepts. Collaboration is an everyday concept : those working together to the same end are deemed to do so at least to some extent in unison. Participation seems to go beyond that. Participation requires, in addition to collaboration, an active, intellectual, innovative and creative contribution that is needed for change. Collaboration does not presuppose change, but participation does.

In an historical and societal context, we may note ideas such as industrial democracy, participation in the capital of an enterprise, participation in decision-making, etc., notions that were particularly debated after World War II. Although the debate left permanent imprints in the social legislation of many countries, today it seems to have fallen silent.

Who is to participate ?

The concept of participation raises the question of who should participate. Are we mainly talking about "workers" or "employees" or "operators" participating in the design and planning of a company's working environment ? But then who is a "worker" in today's fragmented production systems with individual work contracts, autonomous groups and outsourcing ? What about the participation of supervisors and other levels of management ? The competition between (and within) occupational groups further splits the basis of participation.

It should be noted that participation in a given situation offers advantages to some groups but leaves others indifferent or hostile. Thus, there are situations where participation is a field for social power games.

It seems that in many cases we have to abandon the models of participation that made sense a quarter of a century ago. Perhaps we have to adopt other categories like "user / operator participation" vs. design (of products, tools, workplaces, etc.). In point of fact, anyone who can infuse new knowledge and experience into a design situation is a potential candidate. This would be in line with the language of standardisation as well as ergonomics.

The efficiency of participation

In conjunction with the question of "Who should participate ?", we challenge the usefulness of participation. A participatory process is often demanding and requires resources. Does it deliver the expected return ?

Efficiency of participation is difficult to measure and establish. Participation is too multidimensional for it to be easily squeezed into an epidemiological analysis (on multidimensionality see, for example, the discussion by Haines & Wilson, 1998). Some trials have been reported, however. Cotton *et al.* (1988) did a meta-analysis of 91 studies investigating the effect of participation on (work) performance and satisfaction. The results give food for thought, although such meta-analyses have to be taken with a grain of salt.

Modality	Performance	Satisfaction
Decisions	Positive	+/-
Occasional	No effect	No effect
Informal	Positive	Positive
Stakeholder	Positive	Positive
Representative	No effect	No effect

The results tend to show that both informal participation and participation where actors have a concrete (e.g., pecuniary) interest in participation have a positive effect. By contrast, occasional participation, as well as participation through representatives (e.g., trade union representatives) shows no effect on (work) performance and (employee) satisfaction.

A recent publication (Carpentier-Roy, 1997) on efficiency of participation demonstrates the problems of studying the effects of participation. An intervention study had been done in the warehouse environment in Quebec, Canada. The study was completed in 1990. Three years later, another research group undertook a follow-up study on the effects of the previous study. The conclusions were that both from the operational and economic points of view, the results were positive. However, closer consideration of the methodology of the follow-up study reveals major biases that compromise the conclusions. The follow-up was neither badly done nor otherwise faulty, but merely demonstrated the difficulties of a follow-up study on participation in a dynamic and continually changing situation.

Participation at an individual level

At an individual level, a wide spectrum of positions, attitudes and expectations towards participation can be found. Some of them promote a positive attitude towards participation, while others merely engender criticism and possibly lead to a refusal of participation. The Belgian sociologist Bolle de Bal (1982) presented a somewhat cynical but probably realistic view of the motivation of individuals to participate in his three "paradoxes of participation" :

- People want participation, but are at the same time afraid of it.
- Everybody wants participation, but not for other people.
- Everybody wants no-risk participation (but participation always contains a risk).

Interest in participation seems to depend on individual characteristics and on earlier experience or prejudices derived from peers.

Some individuals are more interested in joining an activity that seems to offer social contacts, self-fulfilment and gratification of various kinds. Others may be more inclined to remain at a distance.

At an individual level, also, questions of sharing one's work skills, formal or acquired, are tacitly or openly considered. An employee's "market value" depends on his/her skills, and sharing them may decrease his/her competitiveness.

Participation is not just rules and procedures. It also has an ethical dimension. It should be noted that participation at an individual level has an important ethical component. This is realised especially in participatory projects at the company level. Well-conducted participatory projects may create a situation where both participants' expectations and the psychological investment are high. If, in such a situation, the project is mismanaged, deceitfully or otherwise, and leads to failure, the results may be dramatic not only for the organisation, but also expressly for the participating individuals.

Ethical questions :
- In some cases, the experience of participation may be psychologically profound : avoid being the wizard's apprentice.
- Honesty of objectives.
- Precision of mandates.
- Clarity of messages.

Participation at a group (company) level

Several issues, results and experiences presented above stem from trials and projects undertaken at the company level.

We know relatively little about those group dynamic features that influence participation, but we may assume that they are no different from any other group activity. Many of the issues related to participatory group dynamics are discussed in the following chapters.

It is worthwhile noting that an organisation's hierarchical levels may have varying attitudes towards participation. Sometimes top management and the trade unions may, each from their own motivational standpoint, be supportive of participation. However, middle management is, more often than not, critical and often flatly dismissive of participatory initiatives. Upper middle management may see their organisational position being eroded by more direct contact between employees and top management. In many cases, the foremen and supervisor level proves the real obstacle to any change that further empowers their subordinates. That fear is well–founded, because employee empowerment transfers varying degrees of planning and other responsibilities to the workers. The number of supervisors is reduced and their role shifts towards consultation and coaching.

Participation versus learning and learning experience

Participation is a learning experience for the participating individuals as well as for the organisation itself. If this were not the case, participation would remain at the level of socialising and entertainment.

The learning experience may be a goal in itself. The organisation may favour and organise participatory activities to enhance interaction between the actors. The benefit is supposed to be reaped through better collaboration and mutual understanding between various groups of personnel. The usefulness of participation *per se*, when there are no defined concrete goals, remains to be shown. Even in non-conflictual situations at work, tensions and eventual conflicts of interest between individuals or organisational groups may ruin well-meaning initiatives to "empower people". However, inter-individual frictions and conflicts between groups tend to be a reality in workplaces. Participation without defined goals in such situations has little chance of working.

If goal-oriented participation is instituted, the result seems more likely. A defined goal reduces the ambiguities and makes participation less abstract. It permits actors to gauge the psychological investment, risks and gains.

Goal-oriented participation is sometimes examined in the context of *behavioural modelling* and has been applied in the work safety and health context (Hale, 1987). Behavioural modelling is a strategy of learning that is not far from Pavlovian reflexology. The significant elements are imitation of others' behaviour and feedback. Group norms are important determinants. Behavioural modelling in various forms has been applied to work-related problems and has been reported to be successful in many cases. The significant criticism that can be made is that when behavioural modelling is applied at work, the line between indoctrination and true participation is drawn in water.

Learning at work has been examined in the context of an activity theory (Garrigou *et al.*, 1995) where learning is understood as a complex interaction leading to transformations at work. These transformations interact and lead to a broader learning through repeated cycles. Earlier similar cyclical modelling was discussed in relation to planning and design. The design model does not explicitly rely on cognitive models, as does the previous model.

Teaching a work task by developing cognitive models via participation and simulation has been

developed both in theory and in practice. Learning through a better understanding of the (internal models) of work may be the central element that influences the success of a participatory process.

Learning has a significant social component that is mediated by supervisors and opinion leaders, but it is also significantly influenced by individuals' beliefs and expectations. Also, social feedback seems to be important. Part of the feedback comes from the credibility and prestige of the participatory process, assuming that the process is positively credible. It seems that part of the success of reported participatory projects lies here : the participants feel that they are paid attention in a credible project and are willing to co-operate. Here, St Exupéry's principle (*Vol de nuit*) applies : "In life, there are no solutions. There are forces in motion. You create the forces, and solutions automatically follow."

Participation as knowledge transfer

We may limit our scope and exclude formal professional training and concentrate on the creation, transformation, diffusion, reception and adoption of work-related knowledge and information both vertically and horizontally in an organisation. Transfer of innovation is also an issue that is tangential to participation.

Depending on the context, "knowledge" and "information" are used alternatively to signify the same concept.

Knowledge transfer at work is a subset of learning and education. This section is inspired by the analysis of Mario Roy *et al.* (1995), examining the issue in relation to the physical work environment, organisational changes and the effect of individual factors. Knowledge is defined here as organised representations of the real.

Knowledge transfer is analysed as a process in which there can be identified :

- Generation of relevant knowledge / information for those who need it. Here, generation means creation, research, invention and innovation. User participation is primordial.
- Transformation of information means the reorganisation of knowledge to facilitate the diffusion and adaptation of the expression to suit the target group.
- The actual diffusion of the information.
- Reception of the information.
- Organisational adoption of the information.
- Utilisation of the information.

Roy emphasises that the reception of information is not a mechanical process but a complex interaction in the actors' network, where individual and social factors are intertwined in a complex system. Information should not be understood as an object that moves from one system to another, but merely a result of the interaction between the members of social systems. A participatory process can succeed only if the issues to be dealt with can be linked with the groups' preoccupations and interests. Further, the perceived value of knowledge and information produced by a participatory group should exceed the cost of participation.

In Roy's model, the social network is emphasised. All information that does not find a response in the network of actors and "receptors" of information is doomed to disappear. He notes further that the real challenge is to eliminate barriers that prevent exchanges between occupational groups and organisational units.

How should knowledge transfer be organised ?

In operational terms, formal classroom lecturing about knowledge transfer is minimised, and emphasis is on on-the-job (self) learning, mainly in participatory groups. The specialists act as guides and facilitators and to a lesser extent as teachers. This approach is close to cognitive training in work-related issues.

As a social interaction, knowledge transfer is a more limited issue than participation. If participation has a concrete goal in a work context, the essence of the procedure is the input of new knowledge to reach the goal. This knowledge is not limited to the technical nuts-and-bolts type of knowledge, important as such, however, but also to understanding the work, work organisation, the learning of social skills and so on.

Knowledge transfer in participation has been examined, for example, when ergonomists transferred practical knowledge to non-specialists (St-Vincent *et al.*, 1997). The prior training and organisational status of group members influenced the assimilation of knowledge. Among many other factors, one can highlight the importance of management support and (positive) attitudes of co-workers. In a similar context, the author studied mental models of engineers and operators. The results open promising avenues for redesigning the knowledge transfer approach (St-Vincent, 1994).

Knowledge transfer can take many forms. In the International Labour Organisation's ergonomics projects, transfer of knowledge uses intensive shop floor level participation as the didactic means. The workers are induced to examine their workplace and work without any prior formal training. The facilitator prompts answers to a question. "What would you like to change in your work ?" The process then converges towards realistic proposals using supporting material and group discussions (Ergonomic Checkpoints, ILO, Geneva 1996).

Participation as part of the change strategy

Participatory approaches are often part of a larger organisational change. Modern theories concerning change in enterprises assume or require at least some degree of employee participation. Use of some form of employee participation in a change project may provide a greater sense of control over the process, can help gain employee support, and may result in better implementation decisions.

The following discussion was inspired by Norrgren (1997). A great number of change strategies can be identified. Usually the actors want to give an image that all has been carefully planned, although the *post hoc* analysis shows that much of the result was pure improvisation. Benchmarking and other external references are important levers of change.

Continuous improvement and learning as change strategies are definitely modern approaches that have demonstrated their viability at least under certain cultural conditions. Participation is by definition a natural part of these strategies. It can be used as means to bring reality into learning. French ergonomists point out that there is a wide gap between what is supposed to be done and what is actually done.

Participation is, in a way, a reality test of ideas.

On the other hand, participatory ergonomics may be an approach that can be adopted independently of the change strategies. However, the problem to be tackled must be important enough, because a participatory approach is often time-consuming and expensive.

In practical terms, countless numbers of ways and methods have been proposed to carry out a change process in an enterprise. Two approaches are cited as examples (Hendrick, 1995). Lewin's three phases are an example of such approaches. Three phases were identified : unfreezing, changing, refreezing. In the first phase, the employees are made aware of the need for change ; in the second, the actual change is implemented ; and finally, the new methods are established. In Dalton's model the need to change must exist before the actual change is attempted. The forces of change must be mobilised and oriented by a prestigious influence agent.

Often, the concept of resistance to change is discussed extensively. However, the lack of success cannot be reduced simply to resistance to change.

Work organisation and work practices together with the technology in modern industrial workplaces seem to be under constant pressure to change. As has been claimed since the early days of Taylorism, organisational changes and cumulative requirements for operators may create stress and may provoke negative consequences in production and generate health problems.

Participation has sometimes been understood as a means of reducing change-related stress. Participation in the planning of a future situation at work is supposed to help master the future work situation and cope with the inevitable unexpected problems. In many critical tasks, simulators are successfully used to prepare the operator for future tasks and problem-solving. It may be assumed that simulation techniques using computers will gain in popularity in the future and be applied in production and work-related areas.

Using participation as a means to help change work may be double-edged. On the one hand, participation may be a means of reducing the stress that is usually related to an organisational change. For example, relocating an intensively collaborating working group may provoke negative reactions and create stress. If the group itself can plan the move and occupation of the future premises, the process can be fluid and unproblematic, as this author's experience has shown.

On the other hand, participation as such may, and in fact often does, create stress, and thus may be more of a burden than a help in a change process. It is up to the leader of the participatory process (facilitator) to observe and note eventual symptoms of friction and stress and to take necessary action to correct the problem.

Participation as part of an innovative process

Innovation is a concept that applies to concrete artefacts, to new ideas, new organisational practices and any other issue that proposes making a deviation from old practices. Participation contains many features that are close to innovation. The participatory process as such is innovative, but also, the eventual result may be something new, and therefore, more or less of an innovation.

Adoption of innovation depends on the addressee's perception of the value of the innovation, namely, how useful they see the innovation being to the situation to be changed. Also, the compatibility of the innovation with the addressee's values, earlier experience and needs, affect adoption. The opinion of peers has a significant effect on adoption. The norms of the group that is meant to adopt an innovation have an important effect. In some cases, norms may run counter to adoption of the innovation; in other cases they may favour the spread of innovation. In short, dissemination of an innovation depends on the social system that communicates the innovation to the members (Rogers, 1995).

Peers and opinion leaders seem to have an important effect on the broadcasting of the innovation. When a sufficient number of avant-garde individuals have adopted an innovation, it tends to spread almost automatically. In popularised terms, those who adopt an innovation first are classified as early adopters. Then come the early majority, late majority and laggards.

Participation may be examined as an innovative process, although the most obvious link between the two appears at the end of a participatory process when the results are presented to colleagues and to the organisation. This phase is often underestimated. The result of a participatory activity may have great value for the participants in the process but not necessarily for the others. Thus, the result must be "sold".

Participation as an element in usability testing

Many branches of industry routinely have their products tested and evaluated by future user populations. These procedures are highly formalised. The product to be tested may be an artefact, but is more often an administrative procedure, questionnaire or a computer interface and program. In a recent doctoral thesis, usability testing was examined also from the point of view of participation (Garmer, 2002). It showed that an interaction between "subjects / users" and designers (engineers) of the product in question is important. It should actually take the form of an intimate collaboration that should also be reflected in the formal procedure.

Usability testing is presented here as one example among many other production-, quality- or design-related procedures like just-in-time, lean production, various quality management programmes, reengineering, concurrent engineering, etc. They require, formally or informally, the participation of employees. To what extent they can be discussed under the heading of participation may depend on individual cases and their organisation. ■

References

■ Bolle de Bal, M. (1982), Changement et intervention: pour une ergonomie stratégique, *in L'ergonomie des activités mentales*, José Gaussin et Anne Van Laethem, Eds, Editions Cabay, Louvain-La-Neuve, 7-29.

■ Carpentier-Roy, M.C., Chanlat, J.F., Lanoie, P., Patry, L. (1997), *Ergonomie participative, mode de gestion et performance en prévention des accidents du travail: le cas de la Société des alcools du Québec*, IRSST Rapport R-157, avril 1997.

■ Cotton, J.L., Vollrath, D.A., Froggatt, K.L., Lengnick-Hall, M.L., Jennings, K.R. (1988), Employee participation: diverse forms and different outcomes, *Academy of Management Review*, 13(1), 8, 22.

■ Garmer, K. (2002), *Participatory ergonomics in practice*, Chalmers University of Technology, Göteborg, Sweden, Doctoral thesis.

■ Garrigou, A., Daniellou. F., Garballeda, S., Ruaud, S. (1995), Activity analysis in participatory design and analysis of participatory design activity, *Int. J. of Industrial Ergonomics*, 15, 311-327.

■ Hale, A.R., Glendon, A.I. (1987), *Individual behaviour in the control of danger*, Elsevier, New York, Industrial Safety series 2, 1987, 464 p.

■ Hendrick, H. (1995), *in Work related musculoskeletal disorders: A reference book for prevention*, Taylor & Francis, 271-297.

■ Haines, H.M., Wilson, J.R. (1999), *Development of a framework for participatory ergonomics*, HSE Contract research report 174/1998, 72 p.

■ Norrgren, F. (1977), *in Att förändra och leda morgondagens arbete*, Vis Strategi Ab, Stockholm, 11-46.

■ Rogers, E.M. (1995), *Diffusion of Innovations*, The Free Press, New York, NY.

■ Roy, M., Guindon, J.C., Fortier, L. (1995), *Transfert de connaissances - revue de littérature et proposition d'un modèle*, IRSST Rapport R-099, 53 p.

■ St-Vincent, M., Fernandez, J. (1994), *Représentations différentielles d'ingénieurs et d'opérateurs face à une démarche d'ergonomie participative. Ergonomie et Ingénierie*, XXIXe congrès de la Société d'Ergonomie de Langue Francaise, pp. 122-128, Editions Eyrolles, Paris.

■ St-Vincent, M., Kuorinka, I., Chicoine, S., Beaugrand, S., Fernandez, J. (1997), *Assimilation and use of ergonomic knowledge by nonergonomists to improve jobs in two electrical product assembly plants*, Human Factors and Ergonomics in Manufacturing, 7(4), 337-350.