

II. The Case Study

8. Theoretical considerations - Skills, Language and Computerisation

An increasing amount of attention has recently been focused on the importance of linking humanistic areas of research to working life research. Examples of this can be found in e.g. LO's research policy survey "Research Work for Democracy" ³⁶⁾

"...technology is closely linked to sociology and humanistic areas of research such as language and musicology" (p. 162), "Computers are quick but they cannot think. Computers can result in a depletion of language and emotions if they gain the upper hand" (p. 166)

Another example is the Finnish philosopher Georg Henrik v. Wright's book "Humanism as a way of life"³⁷⁾, which was received with considerable interest by many, the trade union press included, and a short comment here is therefore justified. Its basic premise is the question: What is the fundamental difference between people and machines and where is the limit of a machine's humanity? How far is it possible to transfer to machines the brain's ability to resolve tasks? v. Wright's answer to these questions is that machines lack the ability to think, as the thing that singles out the ability to think is "the ability to live as a member of a human community, to acquire those patterns of action and to participate in those institutions that human beings have developed over the course of history and among which language is the most important" (p. 122). The interesting and important facet of v. Wright's book is this clear insight into the fact that the humanities have a lot to contribute to the discussion on technological development.

However, an in-depth discussion is needed on the role of the humanities in technological development. One of the reasons that humanistic research is gaining increasing importance in the discussion on systems development is that technological development has reached such a level that even those working with systems development are beginning to appreciate the necessity of researching the effects of computerisation on people and society. The discussions held over the last decades on systems development have so far mainly centered on the technical development possibilities of computerisation. Now the question is being asked in some quarters: What are the limits of computerisation? How far can computerisation go without having irreversible undesirable effects on people? It is here, in illuminating and discussing these existential questions, that the humanities come into the picture.

Joseph Weizenbaum, professor of data logic at MIT in the USA, approaches systems development from this perspective in his book *Computer Power and Human Reason*³⁸⁾. The book is a piercing analysis of the effects of computerisation on people and society. The central point in Weizenbaum's argument is the ability of computers to understand natural language. It is his opinion that people are influenced by computers to a very considerable extent in their body and linguistic expression. The computer becomes a part of a person and alters his way of comprehending reality. Computers affect the way people look at themselves - they give them an identity. These are the conditions on which this technology is utilised. The question is then if computers are an aid used on people's terms or if they must become a means of control - a drill instrument.

Weizenbaum rejects the dominating perspective in the artificial intelligence sector which regards the brain's processing of information as the central analogy between people and machines: "There are things people can do because they have a body. Organisms not possessing a body do not have the same command over these things as people do".

This emphasis on the human body is important if we look at what the dominating research tradition in artificial intelligence uses as a basis for its theories and its view of people. Weizenbaum strongly attacks perhaps the most prominent researcher of artificial intelligence, Herbert Simon, the 1978 Nobel prize winner in economics, who presents the points of departure for his research program in the book *The Science of the Artificial* ³⁹⁾. Simon says:

"Within the very near future - much less than twenty-five years - we will possess the technological capability of replacing human operations in organisations with machines. Within the same period we will have acquired a detailed and empirically tested theory on human cognitive processes and their interaction with emotions, attitudes and values.

Human beings, like ants, have very simple behavior patterns. The apparent complexity of their behavior is basically only a reflection of the surroundings in which they find themselves."

The central message in Weizenbaum's book is that there are applications of data processing technology that must be avoided because they produce unforeseen effects. Computers can become a drill instrument for people's linguistic and body expressions.

Weizenbaum and Simon can be regarded as representatives for two different scientific traditions. Simon represents a tradition in systems development that is dominated by data

processing technology concepts and procedures. Weizenbaum represents a view which emphasises looking at the technical development within the framework of the human, social context in which the system is to operate. The first tradition can be said to be a technocratic approach and the second a humanistic.^{40a)} Neither of these traditions is a clearly defined phenomenon - there is, for example, a number of varieties in the technocratic tradition. Even so, they have so much in common that they can be grouped in the same category. The same applies to the humanistic tradition, but it is not so well established as the technocratic, rather it is characterised as an attempt to develop alternatives to the dominant technocratic tradition in the systems development sector.

The differences between the technocratic and humanistic traditions lie in what is emphasised and what is regarded as central and what is peripheral. In a technocratically-controlled operation the emphasis is clearly placed on the purely technical aspects, in a humanistically-controlled activity it is insisted that the technical aspects must be viewed in relation to the overall value of the activity and approach.

The technocratic tradition propounds that data processing systems development is primarily a technical matter that should be left to the experts in this field. This means that the key concepts are of a technical nature. The techniques, interests and values that are positioned at the centre are similarly linked to expertise in data processing technology.

The humanistic tradition states that data processing systems development should always be placed in its social context. Therefore social phenomena such as the concepts "working environment", "meaningful work", "preservation of existing trade skills", "high-quality service to the public" appear as key concepts in addition to the purely technical concepts. These concepts do in fact also occur in the technocratic tradition, but there they are relegated to a more subordinate position and furthermore there is a tendency there to regard them as matters for experts. From a humanistic perspective the personal consequence is of different types of systems development assuming a central position that should not be transferred to different types of experts but should be examined in close co-operation with the parties involved - the employees themselves. Here the demands to highlight such aspects as the organisation of work, the working environment and the preservation of existing skills are important.

A large amount of research into computerisation at ALC has a humanistic approach in the terms of the research traditions described above. This perspective shows that in-depth research into the theme "skills" is required.

How should the depletion of skills associated with computerisation be explained? How can skills be preserved? One way of approaching these questions is to examine the part played by language in more detail.

Both v. Wright and Weizenbaum emphasise that language is central in the area of computerisation. In what way it is central has not been investigated in more detail; no researcher has examined this subject. Historical studies of the formation of concepts in the Swedish language of the

Middle Ages provide interesting references to how radical technological changes can affect the formation of concepts in a language.^{40b)} Such a change occurred when the monetary system was introduced into Sweden. In the ancient Swedish language there were no separate qualifiers expressing quantity and quality. When the monetary system was introduced development shifted towards greater formalisation that only expressed quality and those that expressed quantity. Possibilities for expression were restricted in favor of uniformity - precise demarcation.

It is important to note that this development is not evident in the short term: over a 150 - 200 year period both the "new" and the "old" use of the concepts occur side by side, but following certain patterns. In philosophical works and official documents containing court records from the Middle Ages, the changes are fully implemented - specialisation has been adopted without exception - while the expressions remain faithful to their original meaning longest in private writings of a more unofficial nature.

There are no remnants of the original meanings of these concepts in our present day language. Neither is it any use wondering if the loss of the further meanings of the concepts is irreplaceable or not. The interesting thing for us is the process as such - a technological change can influence a fundamental part of the linguistic concept structure. The difference between then and now is that the linguistic changes were not disseminated in the same way in the Middle Ages as they are today.

This phenomenon gives cause to wonder how the formalised language of computerisation will influence present day concept formulation over the long term. Here it is a question of a formulation of concepts that in a very much more pervasive way affects our language and thereby our way of thinking.

The core of a data processing system is the formalised language. The factor singling out just this language is the exactness of the meaning of the concepts - meanings that conflict with the nature of the living language with its access to expressions with nuances of strengthening and broadening interpretations. The demands made by a formalised language for exactness often require that complicated processes be simplified. The data processing systems developed contain all the limitations of formalised language. The question now is: In what way will the users of data processing systems in working life come into contact with the formalised language?

An on-going research project at ALC is studying the effects of the computerisation of advanced tasks in the Swedish Civil Service, where computerisation is being introduced into the social insurance administration. The prime target for many of the training courses dealing with work procedures is a proper control of the terminology necessary for the job. This is the case for e g the national insurance staff. In what way will their skills be influenced by computerisation?

When a data processing system is introduced the knowledge of the contents of laws and regulations and their application is transferred into the system. It no longer is so vital

that staff members possess this knowledge. Instead the training adopts a more technical approach and deals with how the system works and how it is operated. This means that competence in an area of work is partially replaced by competence in data processing technology.

The wide variation in the matters confronting an employee in manual processing must, when the system is developed, be reduced to a number of representative matters that are fed into the system. Even so the employee has to be prepared to perform processing manually if there are complicated cases that have not been included in the system. It is not possible to retain a full panorama of knowledge if only parts of it are actively used. The premises for learning specialist terminology in a field are comparable to those applying to learning any language not related to a specialist area.

In linguistic terms reference is made to the acquired "theoretical" control of a concept - the meaning of a concept as defined in a dictionary. This is an extension of the meaning of a concept. ⁴¹⁾ It is this theoretical meaning of laws and regulations which is passed on to the employees through training. But concepts do not acquire their full in-depth meaning until they are used in practice in a number of varying contexts. Experience gained from the context when the concept is used provides the particular competence to "handle" it. This is usually termed the intension of a concept's meaning. ⁴²⁾ It is this sense that is developed when matters are dealt with manually in contact with the client at e.g. the national insurance offices; it is through this contact that the skills required to solve the wide variety of matters are honed. Control of trade union terminology is a combination of the concept's extension and

intension sides. Both of these are required to maintain quality in skills.

The following comments from a national insurance office employee touch in different ways the consequences of no longer preserving the "full" meaning of the concepts:⁴³⁾

"No subject requiring judgement can be totally programmed into computerised processing so that all imaginable variations are covered. The variations are unending and differences in the matters to be processed infinitely subtle but they have tremendous bearing on whether payment is to be made or not.

In principle the data processing system can provide any information you like. But what is so dangerous is that a situation is developing where far too many people do not understand the language the computer uses. We need people who can explain and develop answers to the widely varying questions that are asked in practically speaking all situations. One example of the disadvantages of data processing systems: the printout of decision notifications to pensioners. Almost every day we are flooded with enquiries on decisions where we have to explain what is meant in the notification. The decision notifications lack personal characteristics, there is no signature, no reference is given as to who made the decision, nowhere does it appear who should be contacted for further information.

The language - we must be able to pass on knowledge and information in a way acceptable to the recipient. Imagination - has already started to disappear and will be totally absent from the new data processing systems".

The comments touch on the lack of control of both the extension and intension sides. From the extension point of view there are consequences affecting the level of service. The clients often cannot understand the terms used in the system and the employees perhaps no longer possess the degree of competence in their professional skills to be able to explain the meaning of the term. But a lack of

the concepts' intention is also highlighted: "the decision notifications lack personal characteristics..." - "imagination has already started to disappear and will be totally absent from the new data processing systems". Is this social side of the execution of work related to skills? According to the above breakdown into extension and intension it is exactly this social competence that is an important element in the intension side of the language. This is a part of vocational competence that is difficult to define and describe, coming as it does from proper vocational skills, attitudes to the job and personal aptitude. Not least when it is remembered that work of a social character is often performed by women and womens' tradition protects the care sector of the trade, can it be appreciated that this is an element of skill to which considerable attention should be paid when computerising work organisations. In short, the kind of skills associated with industrial and craftwork have a counterpart in more advanced service/white collar work where considerable expertise is necessary to cope with complex rules and formal language on one hand and provide human service on the other. These kinds of skills approach those of a professional or someone with a distinctive occupation and can be called occupational or professional skills.

Returning to the discussion on Simon and Weizenbaum, it is clear that Simon's research only touches on the extension side of language while Weizenbaum primarily emphasizes the importance and necessity of taking the intension side into consideration - that part of a person where the similarity between people and machines ceases. It is this aspect of professional skills in the national insurance service that cannot be formalised.

The discussion on the significance of expert terminology in the preservation of skills touches on an important constituent part of occupational skills - the approach to vocational training and the competence it leads to.

A closer examination of the contents of training is required. This applies both to the systems development staff who develop data processing systems and to the category of users who will work with data processing systems in their jobs. Important questions which should be asked are: What vocational competence does the training pass on? What is the main point of training? What is the relationship between elements from the technocratic and humanistic traditions? And what will training be like for trade categories in the users' sector after computerisation has been implemented? Will this have changed the main point of the training?

The following description is an example showing that a study of training can provide important basic data for research into the effects of computerisation. It is written by a national insurance office employee:^{44 a)}

"During the 1950's and the beginning of the 1960's factual training predominated totally. The contents of insurance systems and how decisions determining the right to compensation were to be made in different situations completely dominated the discussions and the training. The attitudes were adopted from the approved health insurance societies and were restrictive throughout. For example, there was a regulation in the old health insurance societies' charter saying that inebriates or others living indecently abrogated their right to sickness benefits. Even after this regulation ceased to apply a negative attitude remained towards those who appeared at the national insurance offices inebriated. There were cases when sickness benefit was not paid out to the insurance holder and he was requested to return when sober. The accepted health insurance societies were

also characterised by intensive checks and deep-rooted questioning of the right of the person insured to compensation.

After the introduction, in 1963, of the national insurance service a gradual increase in training in procedural matters was effected from the mid-1960's while attitudes simultaneously altered. Basic training retained a relatively high concentration of application studies while at the same time procedural training increased using fabricated practical examples. Attitudes softened. "The insured person should be believed until the opposite can be proved" was a common slogan. Training packages aimed at changing attitudes were introduced, e g "Them and Us" which dealt with immigrant problems, "Service and Collaboration" which thoroughly examined our relationship to the insured person. Checks were gradually reduced and ceased altogether at the end of the 1960's.

Basic training was changed in 1973-74 and adopted a more aggressive procedural character.... The procedural element has subsequently increased in keeping with the introduction of different stages of the EDP system, e g processing different lists, etc. At the same time attitudes have reverted to those current in the 1950's. For example, checks of sickness benefit recipients were reintroduced into the system at the beginning of 1979.

Different reference points in the discussions held at the workplaces were noted as a result of automated processing. Staff members talk and think more in terms of procedure rather than application. "What would happen in the computer if we did it this way? are queries commonly heard".

The training elements described here, which are generally true for similar types of training, can be described by the terms conceptions and skills. The conceptions consist of basic knowledge of the "sector" the person works in. It is a measurement of the insight into a knowledge of the material content of the job. It is the theoretical skills "to know, to be acquainted with"; while the skills, the techniques are "to be able to do, to control". The skills are based on those conceptions and evaluations, "attitudes", that are included in the training and the individual's assessments.

The national insurance staff are highly skilled and through their union were concerned about how further computersisation would affect their skills.

The central notion of vocational skill and the aspects of conceptual competence alluded to by the distinction between the extension and the intension of an expression can be further illuminated by drawing upon insights from current theory of knowledge and philosophical conceptual analysis. Wittgenstein's later philosophy is particularly relevant in this connection through its heavy emphasis on the action aspect of language and knowledge formation. ^{44b)} In the European philosophical tradition, there has been a strong stress on theoretical knowledge, on the kind of knowledge which can be formulated in the form of statements about how things are. But in order to be able to analyse such things as knowledge formation, the building up of action competence and professional skills, it is necessary to broaden the perspective to include various forms of "knowing how" in addition to "knowing that". ^{44c)} A starting-point could be a division of knowledge and experience into three types: (I) theoretical knowledge (or knowing that, propositional knowledge): the kind of knowledge which we have when we know that something is the case and are able to describe this in statement form; (II) the kind of knowledge which we have when we know something by experience without necessarily being able to describe it adequately in the form of linguistic statements (knowledge by experience), knowing how things are); e.g. knowing how a clarinet sounds or how tar smells; and (III) practical knowledge or knowing how to do things. ^{44d)}

An overemphasis on theoretical knowledge to the neglect of experience and practical knowledge is no doubt one of things which helps to explain why technocracy practices are so dominant today. It is automatically assumed that if a man cannot formulate his knowledge adequately in the form of verbal statements, then he must be ignorant. But that is a grave mistake with far-reaching implications for working life studies. One of the effects of the neglect of the role of experience and practical knowledge is an unwarranted optimism concerning the possibilities of formalising working procedures (noticeable particularly in the research tradition concerned with "artificial intelligence").^{44e)}

The next chapter presents a case study - the National Insurance Offices in Sweden - where the pragmatic philosophical perspective alluded to here has been applied in interpreting why skills have changed and what the long-term effects of this on professional competence can be.

The following summary of the main features will clarify the connection:

- initially these two forms of knowledge and language can exist side by side, but subsequently the technical form of the knowledge gains the upper hand. The problem is further aggravated by the fact that suggestions have been made from the central quarters that training should be reduced while at the same time more advanced technology is being introduced.
- Examples have been noted of the rules system being further complicated (e.g. in order to achieve just and proper decisions in some sections) because the data processing system was available and can easily

accommodate some changes. At the same time the Civil Service Administration Office, among others, has proposed additional automation and checking of the employees through the data processing system, the reasons include a belief that the small local offices have difficulty in keeping their knowledge of an increasingly complicated system of rules up to date.

It is when the national insurance office employee and the general public come into direct contact that the new language gaps become clearer and the ability and desire to reply to queries is tested. One alternative is to successively phase out this form of direct contact and have these operations performed via apparatus similar to the automatic tellers now used by banks. This alternative is rejected by both the employees and the ALLFA government enquiry. Instead they wish to safeguard the interface between the employees and the 'clients' and the more highly developed professional skills (primarily on the national insurance scheme's systems of rules) that is required for these contacts to function properly. This does not mean that the use of data processing technology is rejected. But it does mean that demands are made requiring the data processing solution to be designed and introduced in such a way that the central professional skills necessary for a proper assessment of the content of the applications are maintained or reinforced. The research perspective described in this chapter provides the basis for enhancing these skills.

9 A Case Study from the PAAS Project - the Insurance Employees Union and EDP in the National Insurance System

This case study is based on three elements. First, it is based on the research approach developed in the ALC's PAAS project (PAAS is the Swedish abbreviation which directly translated means "Perspective on Analysis, Tools and Working Methods in Systems Development"). Essentially PAAS aims at creating action relevant knowledge and activating structures useful for trade unions in developing policies on EDB and work organisation (Especially of professionally skilled, middle level, salaried employees). The second element is the Swedish National Insurance (i.e. Social Security) System which has become quite large, complex and expensive to administer and so has made extensive use of EDB systems to make services more cost effective. Plans are now being developed for new computerized systems that will be operational in the next 10 to 20 years. The participation of the Union of Insurance Employees (Försäkringsanställdas Förbund or FF for short) in determining the content of these plans constitutes the case's third element. These three elements inter-penetrate since the FF's participation relied on the approach of PAAS as applied in the National Insurance System. ⁴⁵⁾

9 1 The PAAS Project-Methods for User Influence in Systems Development

The term "action research" has been used to describe a number of dissimilar attempts to break down the dominant approach in the social sciences which is inspired by natural science theory. ⁴⁶⁾ We would like to present here the definition

that the PAAS project has given to the term "action research".

Change Through Understanding

A number of the current conceptions on the part played by research in bringing about change can be summarized under the three headings "understanding without change", "change without understanding" and "change through understanding".

"Understanding without change" represents the ivory tower ideology, according to which the researcher should be a completely objective observer removed from all practical considerations. After work the researcher climbs down from his ivory tower, but at work he regards people and society in the same removed perspective as a nature researcher regards different parts of nature. Most people realize that this is an impossible dream, but parts of the ivory tower philosophy often emerge concerning the relationship of research to society.

For us the term "change without understanding" refers to the normal application of expertise where the expert acquires knowledge on some part of human reality and passes his knowledge on to some decision-makers who initiate a process of change without regard to those who are affected by it. From the point of view of the people affected, this is change without understanding. The changes are not the result of the knowledge and experience of the people concerned, they are the result of other people's conception of the situation.

"Change through understanding" means for us an activity aimed at increasing the ability of the parties concerned

themselves to solve their own problems. As opposed to action research it is not (in the first place) a matter of providing assistance to implement a specific action resulting in a limited target. It is a matter of performing the Socratic task of paving the way for a long-term process of change to be performed by the parties themselves. Necessarily these types of processes take their time to implement. It is not possible to change routines established over many years in one night (if one wants to achieve good results). It is not possible to change people with a stroke of the pen.

It is these types of long-term, self-change processes that we want to contribute to in the working life sector. From the employees' point of view a fundamental requirement for a new computer system (for example) could reasonably be that it is compatible with the fundamental values and experiences integrated in the trade union tradition. Bringing this type of problem to the fore is an important part of the research and investigation activities that ultimately result in a new system being installed. The traditional lines between research, investigation work and training must be exceeded to some extent. 47)

Starting Points for the Pedagogic Work

The researcher's work becomes a matter of providing knowledge and experience so that those people subject to a change can better understand their own position, develop their own concepts and find alternative courses of action. The project's pedagogic work has been guided by the following basic factors:

- Ehn P et al, Training, Technology and Products Viewed from the Quality of Work Perspective. Arbetslivscentrum, Stockholm (mimeo), 1981 b
34. See Hubert Dreyfus, What Computers can't do; the limits of artificial intelligence, Harper Colophon Books, 1979
 - 35a. Kvinnors arbete, Teknik, Alternativ, KATA-projektet, (Women's work, technology, and alternatives, the KATA-project), Projektplan, Arbetslivscentrum, 1981
 - 35b. The project Computers in Banks is documented in a final report Bo Hedberg & Marilyn Mehlmann, Bankdatorisering i 80-talsperspektiv - några möjliga utvecklingsalternativ, konsekvenser och styrmedel (Computers in Banks - some possible futures, consequences and controls for the 80s", Arbetsmarknadsdepartementet Ds A 1981:13
- The project Computers in Retail Industry is documented in Anne Bark et al, Tekniken i butiken (Technology in Retail Stores): Arbetslivscentrum, Forskningsrapport 27, 1981. A final report will be published in March 1982, Bo Hedberg et al, Retail in Transition, the role of information technology
36. LO's research policy survey, "Research Work for Democracy", Subreport LOF 1980:1
 37. Georg H von Wright, Humanismen som livshållning, (Humanism as a way of life), Rabén & Sjögren, 1978
 38. Joseph Weizenbaum, Computer power and human reason, W H Freeman and Comp., San Francisco, 1976
 39. Herbert Simon, The Science of the artificial, MIT Press, 1969
 - 40a. Tore Nordenstam, Värderingar och paradigmer vid datasystemutveckling, (Values and paradigm in computers system development), Arbetslivscentrum, Arbetsrapport 1980:27, The following three paragraphs have been taken from pp 67-69 of that report

- 40b. Ingela Josefson, Die Bezeichnungen für 'gross-klein', 'lang-kurz' in alt-schwedischen, Acta Universitatis, Gothoburgensis, Gothenburg 1976
41. In a further development of the theory the concept lexical meaning will be used
42. In a further development of the theory the concept associative meaning will be used
43. Försäkringsanställds förbund, Datorn-studiecirkelsvar, (Insurance employee union: answers from study circles), 1980 a, (p 25)
- 44a. Swedish union of insurance employees, Electronic data processing in the social insurance offices, Programme of action for the Swedish union of insurance employees, 1980 b (pp 21-22)
- 44b. Ludwig Wittgenstein, Philosophical Investigations, Blackwell, Oxford 1953
- 44c. Cf. Gilbert Ryle, The Concept of Mind, Hutchinson House, London 1949, Ch. 2
- 44d. This division into three basic types of knowledge has been suggested by Kjell S. Johannessen, University of Bergen. The philosophical perspective indicated here is further elaborated in some of the contributions to the volume Wittgenstein-Aesthetics and Transcendental Philosophy, eds. K. Johannessen and T. Nordenstam (Hölder-Pichler-Tempsky, Vienna 1981), and Various other publications by Kjell S. Johannessen, Jakob Meløe, Tore Nordenstam, Viggo Rossvaer, Gunnar Skirbekk et al
- 44e. Cf. Hubert L. Dreyfus, What Computers Can't Do, Harper Colophon Books, New York 1979
45. PAAS, Villkoren för förändring i arbetslivet - ett forskningsprogram, (PAAS, Conditions for change in working life - a research-program), Arbetslivscentrum, Arbetsrapport, 1979:1

PAAS; Villkoren för förändring i arbetslivet - en lägesrapport, (PAAS, conditions for change in working life - a progress report), Arbetslivscentrum, Arbetsrapport 1979:13

ALLFA-utredningen ADB inom den allmänna försäkringen) Fallstudie inom PAAS-projektet, (the ALLFA-study ADB in social insurance - a progress report), Arbetslivscentrum, 1979:2

ALLFA-utredningen - en lägesrapport, (The ALLFA-study a progress report), Arbetslivscentrum, 1979:14

46. See eg
Åke Sandberg (red), Forskning för förändring, Om metoder och förutsättningar för handlingsinriktad forskning i arbetslivet, (Research for change, On methods and preconditions for action research in worklife), Arbetslivscentrum, Forskningsrapport 20, 1981
47. The section on change through understanding has been taken from Tore Nordenstam's paper "Science and Art - Two Ways of Investigating Reality" (January 1982). Cf. also Tore Nordenstam, "Change and Understanding", Bo Göranson et al, 1978a, pp 98-106
48. See Göranson et al, 1978a (pp 120-131)
49. See Göranson et al, 1978a (pp 107-112)
50. See Göranson et al, 1978b (pp 24-25) and PAAS, 1979:1 (pp 12-16)
51. See Ingela Josefson et al, FORM-projektet-Forskning om metoder att förmedla resultat i arbetslivsforskningen, projektplan, (the FORM-project - Research on methods of conveying results from worklife research - a project plan), Arbetslivscentrum, 1981. The paragraphs just quoted have been formulated by Tore Nordenstam, 1980 a.a.