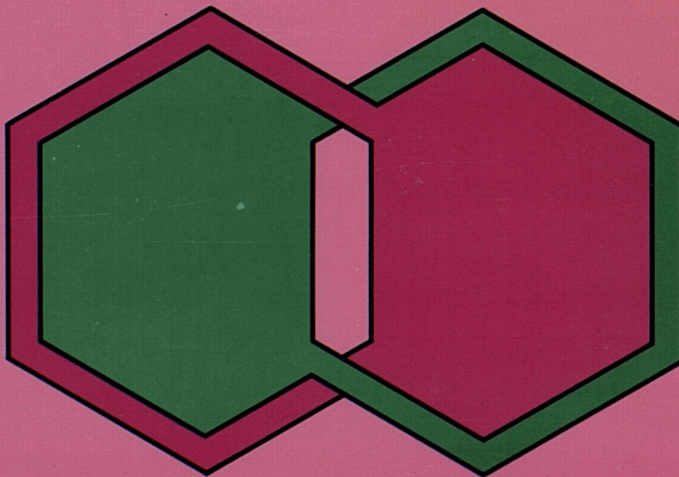




Commission of the European Communities

**Joint research
by
trade unions and universities
into
the technological society of tomorrow**



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**Proceedings of the conference held on
15 and 16 June 1987 in Brussels**

Edited by

L. E. Andreasen

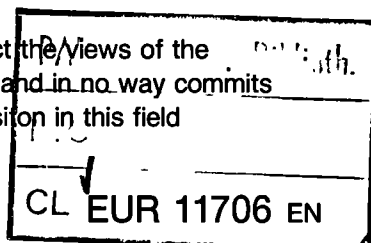
Commission of the European Communities

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1988



PREFACE

Nowadays, the value of interaction between universities, research institutes, industry and commerce is very widely acknowledged. Research has always fostered the development of industry, inventing new products and new forms of production. However, the rapid development of the new technologies has established an even closer connection between research and manufacture, which now finds expression in cooperation between universities, research centres and industry. Over the past decade, cooperation of this type has reached an unprecedented level of intensity. Science parks and innovation centres have proliferated not only in the United States but also in Europe.

The enormous potential which the new technologies represent for our economy, our environment, our society and our way of life is unquestionable. If Europe wishes to maintain its position on the international stage, it is thus vital that it seizes every opportunity which the new technology offers.

One of the characteristics of European society lies in the development of its industrial relations. Given this fact and in a context of high unemployment where workers are particularly reticent about mobility, success depends entirely on the acceptance and motivation of the workforce.

Moreover, the new technology is also leading to changes in industrial relations. Distance working, flexible working hours, the proliferation of small and medium-sized firms, new types of jobs and new skills, are all factors which disrupt the frameworks within which the trade unions have traditionally operated.

So that the new technologies may be introduced on a socially acceptable basis, it is vital that the two sides of industry jointly discover, in an atmosphere of trust, appropriate answers to the changes engendered by the new technologies.

However, a genuine dialogue presupposes a balance and an equal level of knowledge between the two sides of industry. In this context, cooperation between the universities, research centres and the trade unions is therefore of the utmost importance.

This cooperation - which is still in its embryonic state - can confer many other advantages too, as the reader will discover from the addresses delivered and discussions held at the 'European Conference on Cooperation

between Research Centres and the Trade Unions' - the first of its kind - which, on the initiative of the Commission of the European Communities, was held in Brussels on 15 and 16 June 1987 and which is the subject of this book.

Over 250 representatives of trade unions, universities, research centres and national administrations took part and were able to exchange experiences and discuss the various forms and structures which such cooperation might ideally assume and what initiatives might be desirable at national, regional and European level. For, despite the differences of viewpoint, the diversity of forms of cooperation, very different traditions and in some cases, the total absence of such cooperation, the participants were unanimous in the view that measures must be taken to develop cooperation between trade unions and research centres at national, regional and Community level and to ensure its durability.

Publication of the conference reports is intended as a contribution - however modest - to the continuation and intensification of the 'dialogue between researcher and worker' in the Member States and to its development as a permanent feature.

Manuel Marin Gonzalez

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Opening Session

OPENING ADDRESS ON BEHALF OF THE
COMMISSION OF THE EUROPEAN COMMUNITIES

Jean DEGIMBE
Director-General,
Directorate-General Employment, Social Affairs and Education

It is a great pleasure for me to welcome you, on behalf of the Commission of the European Communities, to this conference on 'cooperation between research centres and trade unions'.

I particularly welcome the speakers, the participants in the round table discussion and above all the Vice-President of the European Trade Union Confederation, Mr. Antonio Pizzinato.

I extend my greetings to the researchers and trade-union representatives from the non-Member States.

As far as I know, this is the first time that a conference on research brings trade unions, universities and other research centres together at European level. So I would first of all like to state the reasons why the Commission has taken the initiative of organising this conference.

New technologies have an enormous potential, not only for strengthening the economy but also for creating better living and working conditions and improving the environment. It is therefore imperative that we become more aware of the possibilities open to us, and that we mobilise all the resources available in order to make use of this potential.

Cooperation is vital at all levels, and during the last few years, with the exchange of information between universities and research centres on the one hand and industry on the other, it has reached a greater level than ever before throughout Europe.

Moreover, the growing number of science parks and innovation centres shows that there is a mounting interest in this aim of establishing cooperation between the scientific world and industry, as far as research is concerned.

In the field of education and training, there has also been action on a national scale. Several universities and other higher education establishments have set up education and training programmes in collaboration with trade unions and industry.

The Community, too, has taken action in this field by setting up a programme of cooperation between universities and firms for the purpose of technological training, namely the COMETT programme, which was adopted by the Council in July 1986.

Another programme, ERASMUS, gives 25 000 students the opportunity, until 1990, to undertake part of their training at a university situated in another member country.

In the field of research, however, workers and their representatives and researchers have rarely managed to cement a relationship of continued cooperation, whilst industry and universities have succeeded in doing this, as I have just pointed out.

It is true that collaborative research between universities and trade unions is more difficult, and it must be admitted that in many cases the barrier between the academic world and the working world is hard to surmount.

I often have the impression that researchers do not fully understand the problems of workers, and that they therefore lose what could provide them with a strong sense of purpose in their research work; moreover, workers have hardly any contact with the world of research and consequently know little about the possibilities it opens and its working methods. Consequently, they find it difficult to formulate their research needs and communicate them to the academic world.

We are thus confronted with a two-sided communication problem.

The whole purpose of this conference is to make the problem easier to understand, and the presence amongst us today of many researchers from universities and research centres in Europe and a similarly large number of representatives from the trade union movement is greatly encouraging in this respect.

Cooperation between the academic world and all other circles must be strengthened, not only at a national and regional level, but also at a European level, so as to facilitate and speed up the process by which researchers communicate the new technical and scientific knowledge that they acquire.

The Commission lays great emphasis on this, for Europe has, for some years now, been rather slow in applying new technologies, as a result of which there has been a decline in competitiveness and a great many jobs have been lost.

Faced with this situation, the EEC has drawn up several Community programmes to ensure that new technologies are conceived and applied, thus encouraging the restructuring of European industry. The ESPRIT programme is a well-known example. But economic growth and industrial achievement in the European Community also depend on the quality of its human resources.

This has always been a decisive factor, but never more so than now, and the advantage the Community has in terms of competitiveness may be under threat and even in danger of being greatly eroded if its human resources are not developed.

The various programmes drawn up by the Community in the field of technology, education and training have a great importance that I make a point of emphasising, but it is also essential - and the President of the Commission, Mr. Delors, has stressed this point on several occasions - that all social and economic interest groups in the European Community participate in the process of applying the new technologies. Only in this way can we succeed in incorporating a European social dimension within technological and industrial development.

I fear that if scientific research does not take more account of human and social considerations and the demands of workers, then it will meet increasingly greater opposition when applying the results of its work.

The trade unions, for their part, should build upon their relations and cooperation with the academic world; otherwise, in European society with its rapidly changing technology, they are in danger of losing the respect and importance they enjoy today as the other side of industry, and at some time may no longer be able to exert any influence whatsoever on research and development policies.

I hope that this conference will urge the social and economic interest groups present here today to be more aware of these necessities.

The programme for this conference - and I have pleasure in emphasising it - has been drawn up in direct collaboration with the European Trade Union Confederation.

You will note that we have decided to invite the speakers to describe some of the rare cases where trade unions and a university or other research centre have been collaborating for some time in research activities. These cases are structured in a very different way and each is peculiar to its national origin.

The examples given by well qualified experts will provide us, I am sure, with the necessary facts to examine the dual problem of communication

and cooperation in research between trade unions and research centres, and will lead, I hope, to proposals concerning action which could be taken by the people most directly concerned, namely the researchers and the workers, as well as governments and the Community.

I am sure that what this conference has to unfold will be interesting and useful, and I now call upon the Vice-President of the European Trade Union Confederation, Mr. Antonio Pizzinato, to speak.

OPENING ADDRESS ON BEHALF OF THE
EUROPEAN TRADE UNION CONFEDERATION

Antonio PIZZINATO
Vice-President,
European Trade Union Confederation

This important conference on 'Cooperation between Research Centres and Trade Unions' was organised by the Commission of the European Communities. On behalf of the European Trade Union Confederation, therefore, I wish to thank the Commission for having brought together a considerable number of experts from all countries in Europe, in order to examine this vital matter.

We see that in the industrialised countries, research is taking on an increasingly important role. Cooperation between industry and research centres has been viewed favourably in recent years by all governments.

The results of research and technological innovation can determine the future of the European economy; but at the same time, it must be said that they may influence - indeed, they already influence - the working conditions and daily lives of workers as well. Research, therefore, directly concerns workers, for the type and quality of industrial development also depends on research. And to be modern, research must take account of the legitimate demands of the workers.

We know the reasons for the difficulties in relations between workers and researchers, and we want to overcome them, for development which is qualitatively different depends on the link between knowledge, science and work. To arrive at this, both parties need an 'interpreter' who is able not only to express the demands of workers in the scientific language of researchers, but to make the results of research accessible. A contribution in this direction will certainly be forthcoming from the European trade union movement.

This conference therefore provides a valuable opportunity for trade unions to state precisely how fruitful relations may be established between research centres and trade unions.

Cooperation between research centres and industry, encouraged by the public authorities, has developed rapidly in the course of the last few years; it cannot be ignored and we do not intend to question it. We also welcome the fact that many researchers are trying to incorporate, on their own initiative, the problems of the working world into research activities.

The trade unions themselves have come up with numerous ideas on how to establish cooperative relations with the researchers. The growing number of researchers active in the trade union movement goes to demonstrate their interest in research activities with a social bearing.

Moreover, we also need their expertise to express our opinions on the technical aspects of projects like 'ESPRIT' or 'RACE'. But, in order to take a more decisive step forward in our relations with each other, we need adequate financial resources on the one hand, and on the other, we need to ensure that workers and researchers are fully united within the trade union and in their trade union representation.

In fact, the inadequacy of the financial and staff resources provided by the public authorities makes it impossible to build a lasting relationship of cooperation with researchers.

We believe it is necessary to progress beyond the occasional or intermittent relations between researchers and the trade union movement which have been the norm until now. What we propose is to institutionalise the exchanges of information and knowledge through cooperation on a permanent basis.

Through such cooperation projects, in which both workers and researchers participate, we believe it would be possible to create an infrastructure which:

- (a) takes account of the needs of researchers and the demands expressed by workers;
- (b) proposes research projects;
- (c) makes known the results to all concerned.

Such cooperation will be beneficial in all respects, for both workers and researchers. Thus, whilst workers will be able to benefit from the results obtained from research work, researchers will be able to widen their field to cover new ground previously unexplored. In fact, who can have a better knowledge of the working world and social conditions than the workers themselves? Workers have exceptional skills: 'know-how' and a marked spirit

of creativity, but they very often lack the resources for formulating research projects. As for the trade union leaders, they are entirely taken up with day-to-day matters, and unfortunately are often forced to neglect longer-term projects. As far as researchers are concerned, I think it can be said that they are often forced to confine themselves within the terms of the research project, and that their technical language is sometimes difficult for ordinary workers to understand.

The problem, therefore, is to think up another language, another form of communication, and new ways of cooperation for the two worlds. For trade unions, research and technological innovation are not and should not be matters confined to experts. What is important is the qualitative side of the development of production, work organisation and society. Whoever has access to research can acquire knowledge and can, as a result, command different degrees of authority in society.

Scientific and technical development is not a neutral factor in society: unfortunately, it often has negative social consequences, and workers sometimes find themselves faced with choices that have been already decided for them. There is rarely a coherent policy of consultation, of negotiation (as they say in Italy, of 'industrial and economic democracy') for the introduction of new technologies. When such a policy is followed, new technologies are more readily accepted in society. History shows us that one cannot continually exclude those - namely, the workers - who are most affected by the changes taking place on the work site, without causing serious tensions in society.

We know that change in industry cannot be a success if it is not accepted by everyone, and if all those affected by it are not in favour of the change. Trade unions are consequently calling for a policy which does more than control the social consequences of change in industry. We demand that the interests of workers should be taken into consideration from the outset in the formulation of research projects on which innovation, new products and methods of production are based. We want to take part in decision-making, so that we do not find ourselves merely having to suffer the effects and repercussions of research projects and changes decided on unilaterally by the employers.

Where that has occurred there have been positive results. By formulating alternative assumptions and proposals, it has been shown that new products and manufacturing processes can be developed which bring about an improvement in working conditions and, at the same time, create the necessary environment for full employment.

We believe this has happened in the Federal Republic of Germany, in the areas hit by the mining crisis, where research into the development of new products, taking account of local resources, has produced good results. Similarly, in Sweden, a number of projects have generated alternative ideas for the development of ceramic materials and the timber and construction industry; whilst in Italy, an attempt is being made to influence research from within, by bringing together all the researchers working on a project and urging them to adopt social aims right from the start, thus favouring a policy adapted to the demand for research.

The trade union movement must also have the capacity to stimulate and promote a kind of 'demand for research' which is not strictly aimed at international industrial competitiveness. Research must be directed towards the great problems of safety, prevention of danger to the environment and innovatory forms of work organisation and social structures. Likewise, research must be directed towards problems of basic knowledge, towards projects which in the medium and long term will influence the way we live and work. Clearly, such research work requires intervention by the public authorities and social groups concerned: it may be doubted that demands for research of this nature will arise spontaneously in a competitive society and a free market.

I could go on giving other positive examples, showing the extent to which the active relationship between researchers and workers has brought about an improvement in the social nature of research.

During the next two days, we shall have the opportunity to hear about the experiments carried out in different European countries. This information will permit us to define points of common interest, enabling cooperative relations to be developed successfully.

I invite all participants to make an active contribution, and for my part I assure you that the trade unions are ready to consider all positive proposals.

I can tell you now, on behalf of the European trade union movement, that this conference must not remain an isolated occasion. On the contrary, it must mark the beginning of lasting cooperation at European level.

For this reason, I wish to reiterate - as we stated at the meeting on 7 May in the presence of the President of the Commission of the European Communities, Jacques Delors, and the President of the European Council, Wilfred Martens - that it is vital for the European trade union movement to strengthen its capacity to make proposals and put forward projects in the course of decision-making as regards production and European economic and social affairs.

Between now and 1992, throughout the stages in the construction of the 'Single European Internal Market', we must in parallel establish a genuine social dimension - whether in terms of social protection or contractual relations - by defining guidelines at European level and laying the foundations for discussions with the Community institutions as regards policies concerning development, full employment and the reform of training schemes, teaching methods, and continuing education systems. All this may be seen as a development of the ideas put forward at Val Duchesse.

This implies, in the area of research, a leap forward in the quality of cooperation policy at European level. I refer not only to the need for consolidating and amplifying the agreements reached between States which have contributed to the ESPRIT or RACE projects, or to the EUREKA project itself, but to the need for nations, aided by the trade unions and research associations, to adopt selective measures in financing research programmes which give priority to all projects linked in some degree to experiments in collaboration and cooperation within the Community framework.

Good relations between the European trade union movement and the world of research are essential in order to attain these objectives. These relations could be given concrete form through the establishment of 'scientific communities' of an interdisciplinary and international nature. The latter could draw up and put into motion 'finalised research projects' called for by workers and trade union organisations, employing individual researchers or research teams made up of workers who could also be of different nationalities.

Special agreements to finance 'research programme contracts' could be drawn up to manage the use of resources at the disposal of the European trade union movement.

In view of these points, and contributions by participants, I believe the Commission should, after the conference, set up a working party consisting of representatives from research centres and trade unions to

prepare our future meetings. Action at European level should obviously take into account the many different international situations and disparities in the development of cooperative relations.

Ladies, gentlemen and colleagues, this conference was conceived as a means of exchanging information. For us, there is no doubt that it represents the first stage in a process leading towards lasting cooperation. We wish to emphasise the necessity of maximising the utilisation of research capacities in order to make the most of the expertise, 'know-how' and knowledge of workers for the purposes of research. The most appropriate methods and resources must be found to associate workers with planning and formulating research projects: i.e. structures and instruments able to open up research activity to the social problems of workers.

For the purpose of developing the policy lines arising from the Val Duchesse agreements, the Commission of the European Communities could promote the development of projects involving cooperation between research centres and trade unions.

We hope that research will take a turn in this direction, for we believe that it represents the general interest of workers and of the European Communities.

I thank you for your kind attention.

Session I

ASUR (ASSOCIATION - SYNDICALISME - UNIVERSITE - RECHERCHE)
AN EXPERIMENT IN NON-INSTITUTIONAL COOPERATION BETWEEN
TRADE UNIONISTS AND RESEARCHERS

Pierre Eric TIXIER
Maître-Assistant
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Paris, France

Summary

The 'Association Syndicalisme Université Recherche' (ASUR) set up in France in 1985 by a group of CFDT officials and researchers of various disciplines is intended to facilitate cooperation between the research world and the trade unions. There being no institutional connection between researchers and trade unions, cooperation takes place on a voluntary, individual basis and, whilst providing for equality between the two sides, makes allowances for differences relating to occupational field, constitution and legitimacy amongst both trade unions and researchers. The experience of the ASUR is marked by the autonomous nature of cooperation but each participant may individually appropriate knowledge produced collectively and use it as best befits its own objectives. Being an interface body between research and trade unions rather than a research body, the ASUR has set up mixed-discipline diagnosis groups on various topics which have had an impact on the strategies and research demands of professional federations. It has led to an increase in requests for conferences and training and the establishment of regular forms of collaboration between trade unions and researchers.

The crisis affecting industry in the west has radically altered forms of work, companies and technology. Faced with these changes, can trade unionism redefine its strategies and/or direction? This collective challenge calls for collaboration between researchers and trade unionists, for no one social group alone can hope to take all these changes into account. The

problem therefore is not so much one of a common will as the need for suitable procedures in a society where trade unionism has little or no resources for internal research, which is the case in France.

In France there are countless instances where collaboration between researchers and trade unionists has resulted in failure or misunderstanding. This is due as much to the effect of arguments that are extraneous to the situation as to the weight of ideology which destroys the professional aspect of joint work. In joint projects involving trade unionists and researchers, the latter became identified either with Communist party fellow travellers or labourites and in both cases it was assumed that the intellectual had merged with the Labour movement, regardless of the specific nature of his work. Against this background the ASUR was set up in 1985 by a group of leaders in the CFTD¹ and research workers from various disciplines. Based on an analysis of previous attempts, it seeks to facilitate cooperation between the academic world and the world of trade unions by acknowledging differences in occupation, status and the claims to legitimacy of trade unionists and research workers rather than by attempting to merge both parties.

Selection of a working structure was a crucial question in view of the wish to ensure continuous cooperation. Would it be advisable to set up a legal structure linking the CNRS² with the CFTD or should another form of joint work be sought? We opted for the actor rather than the institution in full awareness of the obvious fragility of this arrangement. Thus, the experiment depends on the members' good will. There is no institutional link binding researchers and trade unionists, commitment is individual rather than based on the terms of reference of the association. In making this choice we counted on the necessary synergetic effect between researchers and trade unions, on mutual self-interest and individual contributions.

1. DIFFICULTIES TO OVERCOME

Cooperation between researchers and activists encountered a number of difficulties which had to be identified before they could be overcome.

1 Confédération Française Démocratique du Travail (Democratic Labour Federation)

2 Centre National de Recherche Scientifique (National Research Centre)

(a) Differences in the Perception of Society

Starting from a shared militant experience, activists' perception of society tends to be consistent with their role as a collective actor, whereas researchers explain society in paradigmatic terms. A meeting between these two approaches often results in conflicting interpretations which are difficult to settle without mediation since one may preclude the other and each participant in the discussion may invoke a legitimacy system which the interlocutor does not understand or most of the time is unfamiliar with. Such conflicting views on how society works may be compounded by the complexity of relations between militant intellectuals and researchers who frequently work on their own and subscribe to a different moral code, for example as regards the signature of texts. Whereas researchers will demand that their signature appears on a text they have written or to which they have contributed, this requirement does not seem appropriate or necessary to militants who, aware of the collective nature of the presentation of ideas and the protection this affords, accept such situations as a matter of course.

(b) Different Systems of Constraint

Researchers see collaboration with activists from the scientist's point of view, which assumes the usual research criteria - the burden of proof, need for final publication - even if the former accept the confidentiality of results for the duration of the study, as is frequently the case when working with management. This requirement is sometimes unwelcome to activists, who feel that the researchers are using their knowledge of the firm to achieve fame and personal career goals; or unionists may fear exposure of their own strategies - a problem also frequently encountered when working with management. The requirement to publish is certainly the best guarantee workers can have as regards the value of the study. Researchers' need to render account to their scientific world of reference obliges them to observe certain research procedures which are the guarantee of professionalism. Secondly, these procedures make it possible to avoid confusion of roles between researchers and militants which in France has often been the cause of failure in collaboration. Militancy in

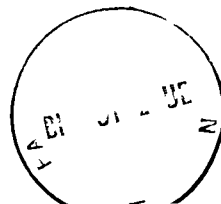
the researcher or in the trade unionist who is a researcher is undesirable when carrying out research since confusion is likely to arise and lead to an unproductive situation.

Militants belonging to a movement which is associated with their personal history are inclined to require researchers to adopt a militant approach to the work, and the latter may even be tempted to adopt the approach of an organisation founded on altruism, but this does not preclude militants from receiving some reward for their participation in the movement. Research workers may be tempted to abandon the uncertainties of science for the certainties of the collective movement. When this occurs, it leads to quid pro quos, and militants will condemn the researcher for having adopted the approach they themselves had asked him to adopt³. Accepting an observer's scrutiny is much harder for militants than for a production organisation. Since the former is based on altruism, as we said before, it could be felt that the act of observation or of working together calls the group's identity into question.

Winning the researcher over to the altruistic point of view and making him one of their own may mitigate the fear of the outsider's scrutiny. Another difficulty is linked to the operation of trade unions. They, like all organisations, are systems of strategic relations and their particular task is to develop representation systems and ideologies as well as to engage in negotiations and the management of industrial disputes. In this context, studies or joint working parties of researchers and activists can become stakes in the strategy of the organisation which would inevitably diminish the quality of the study, for certain information might not be divulged or the question might be partly evaded, not so much by researchers as by trade unionists.

Such problems of strategy could also arise between researchers using paradigms that are different or in competition. In this case joint research is likely to become an internal battleground between researchers, each maintaining that they have the 'right' paradigm, which would generally result in the activists losing interest and the cessation of joint work.

³ In some cases some militants have adopted the position of analyst and have become researchers and produced noteworthy works, for example, Daniel Mothé, 'le métier de militant', Paris, le seuil 1973



(c) The Problem of Legitimacy

Apart from the question of competition and different constraints on researchers and workers, the fundamental problem of joint research or long-term collaboration is that of the legitimacy of the discussions: on the one hand there is the legitimacy of the militant group founded on altruism, on the other the legitimacy of university institutions' debates and research based on a scientific approach. How can the contradictions arising from this situation be handled?

The central point of the approach adopted by the ASUR is to allow participants to act in accordance with the legitimacy system on which their action is based rather than seeking to establish mixed legitimacy.

2. WORKING PROCEDURES

On the basis of these more or less explicit observations regarding other attempts, we have sought to establish working procedures, which are still largely experimental but can be encapsulated in a few simple principles:

- (a) All work, excluding training activities, undertaken in the context of the ASUR is done with a view to publication, so as to prevent research workers gradually losing interest. They are willing to accept short-term collaboration but cannot undertake long-term collaboration for it inevitably produces findings reflecting the requirements of the research environment. We therefore include texts containing an assessment of the research. For militants, production of the written word can justify the efforts made.
- (b) All the ASUR's work is based on the assumption that a synergetic effect and an exchange of knowledge will take place. Working relations between militants and researchers are not one-way: it is not assumed that one category possesses all knowledge and the other is in the position of learner. Both parties are on an equal footing and each holds keys to the interpretation of society. Shared knowledge becomes particularly relevant with respect to work on recent trends in the company, for both parties only hold partial information, for example concerning the impact of the development in France of company schemes

(projets d'entreprises) in industry and the consequences for trade union action. It is assumed that in a working party we have set up, before seeking an interpretation, information will be exchanged on the effect of these new managerial practices.

- (c) The ASUR is an interface between research and unions, rather than a research body. As a consequence of this choice it does not carry out research directly, but facilitates relations between trade unions and researchers. This solution was preferred to that of setting up a new research body, there being already a number in France, while the trade unions' problem is to discover which research body to approach. The ASUR has elected to establish two networks - of researchers and activists - to carry out its task.

3. PRODUCTS AND EFFECTS

Compared with other types of collaboration between researchers and activists, the ASUR experiment is distinguished by the independence of its joint work, which is not subordinated to the strategic goals of the trade unions and is thus outside the power play. Thus, the knowledge produced is not used by the institution to achieve its objectives. On the other hand, each participant is free to use the knowledge produced collectively for his own purposes. Trade union leaders can integrate the findings of group discussions in the strategy of the organisations they guide. Researchers can test their assumptions and enrich their field of study and use the findings of joint work in their own work, each participant individually controlling the use of knowledge produced collectively.

It has been noted that this type of interaction between researchers and workers leads to innovation and creativity, for example the impact of new forms of joint management or individual working hours. Some trade unions have altered their strategies, which have become less defensive, and their leaders have become more insistent than in the past on obtaining explicit guarantees from company management in the course of negotiations.

Activists imbibe the information, put it to the test, thus obtaining a perspective on the researchers' models so that useful aspects can be integrated into their action. There are, however, some theoretical drawbacks to these arrangements: from the trade union's point of view, it does not control the interactive process between the two categories of participants

in the experiment. The militants' activities may be affected and the synergetic effects on researchers and workers of certain factors could call the union's overall strategy into question. There is also a specific risk for research workers in this type of arrangement - the fantasy of omnipotence depicted by one science fiction writer where the distinction between study and action is lost. Belonging to the scientific community constitutes a defence against such an attitude.

Let us now look into the types of products produced by such an association. At the outset four mixed study groups were set up on different subjects: changes in management methods and organisation of firms, changes in skills, the mechanisms of collective bargaining and the assessment of relations between militants and trade unions. The various groups worked on general analyses and cases presented by unionists combined with interviews with company activists or researchers. This exchange of views led to changes in the mutual perception of the problems under discussion and to experiments with new policies.

Setting up study groups as the joint work proceeded had a slow and gradual impact on strategies and requests for research by trade unions. For example, the services federation, representing a sector covering some four million wage-earners in France, after participation in one of the study groups, employed a CNRS researcher to work on three topics: analysis of economic trends in its sectors of activity, assessment of its organisation structures and the various trades and occupations in the industrial branches in its field of activity, with a view to working out strategies adapted to a context of rapid change. Today the ASUR experience has prompted many requests for conferences and training and has developed habits of collaboration between unionists and researchers based on the recognition of the differences in motivation.

This experimental interactive arrangement is limited by the weak structures of trade unionism itself and by the lack of cohesion in the movement where it has been splintered into several competitive unions which can have little impact on company management. Only when strategy is based on creativity and innovation can it release the means to influence changes in working patterns and firms.

ESTABLISHMENT OF TRADE UNION/UNIVERSITY RESEARCH COOPERATION:
GERMAN PILOT PROJECTS

a) COOPERATION AS SEEN BY THE FEDERAL GOVERNMENT

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Summary

The Federal German Government takes the view that cooperation between the universities and the real world of the economy presupposes cooperation not only between the universities and the employers but also between the universities and the workers since the interests of all those involved in economic life are closely interconnected. While there has been some growth in cooperation between universities and industry, the same cannot be said of cooperation between the universities and the workers. Yet, cooperation of this type would be as much an advantage to the universities as to the workers.

It is this thinking that since 1982 has prompted Federal Government support for a DGB regional university/trade union research cooperation project involving the creation of five regional centres. The aim of the project is mainly to devise and test organisational forms for the transfer of knowledge.

With the project now approaching completion, Dr. Swatek comments on the initial promising results but stresses that, under the terms of the constitution, the continuation of the project will depend on the granting of subsidies by the Länder.

Thank you for the opportunity to address this conference on cooperation between the universities and the trade unions in the Federal Republic of Germany. I propose to describe how the Federal Government or the Federal Ministry for Education and Science see such cooperation between universities and unions and also to present a project which we have been

pursuing for four and a half years together with the German Trade Union Federation (DGB). This project, for which we have provided assistance totalling DM 3.7 million, is known as 'regional opening up of university research for workers' problems'.

PART 1

Like the governments of all other major industrial states, the Federal Government promotes the expansion of relations between the universities and the economy. Such endeavours rank very high among our university and science policy aims. An important element in endeavours to improve cooperation between the universities and the economy is cooperation between the universities and the trade unions.

In the context of its aid policy, the Federal Ministry of Education and Science does not see cooperation arrangements with the two sides of industry as matters to be dealt with separately or as alternatives; rather they are seen as complementing and interacting upon each other. Let us look, first of all, at the relationship between the universities and industry.

The reasons why all major industrial countries are today endeavouring to intensify the cooperation between the universities and industry need no explanation. They derive from the current socio-economic situation, which exhibits common features in many countries: we are involved in increasing international competition, particularly with the newly industrialising countries and are obliged to cope with high and constantly growing labour costs on the one hand and limited reserves of raw materials on the other. In addition, we are faced with increasingly urgent questions of environmental protection and energy shortages. This means that those products and processes will be able to hold their own in future markets which exhibit a high degree of know-how and technology. Because of the rapid rate of development, particularly in the field of key technologies, such processes and products have constantly to be re-invented and adapted to swiftly changing problems. The contribution which research is required to make to a nation's production is thus increasing steadily.

Above and beyond that, technological change demands increased exertions in other respects as well. In the present phase of rapid and radical technical and scientific change and dwindling product lifetimes we must not concentrate exclusively on our ability to compete and to hold our own in the marketplace. It is equally important to keep an eye on the

profound alterations in the structure of society which these changes are bringing about. New technologies should serve the human race, not harm it, so that a precautionary assessment of the consequences of new technologies is in everybody's interest.

This is a matter primarily for academics. Those engaged in the natural sciences, engineering and the humanities must ensure through dialogue with each other and with industry that even after changes our living and working environments retain a human dimension.

Against this background attempts are now being made everywhere to make the best possible use of existing academic resources. This applies especially to the universities for they represent a considerable financial burden on society. The aim is to involve the universities, as centres of research and development as well as teaching and further training, more than in the past, directly in the process of solving the economic and social problems outlined. On the one hand, increased cooperation between the natural sciences and the humanities is required, particularly with regard to the assessment of the consequences of new technologies, while on the other, cooperation between universities and industry becomes crucially important.

Industry must have rapid and easy access to the new technical developments in the universities, otherwise they cannot be incorporated with the necessary speed into products and processes which satisfy the criteria 'marketable, not damaging to the environment and energy-saving'. For small and medium-sized undertakings in particular, a properly functioning transfer of knowledge and technology from the universities is vital, because unlike larger firms they generally cannot carry out their own research and development. In other words, they need the support of the academic world as an essential condition for surviving in the face of technological changes.

The less effective the transfer between universities and industry, the less able such firms normally are to innovate and compete. This means that the security of a considerable number of our jobs is determined to a large extent by whether cooperation between universities and industry works satisfactorily.

The universities for their part benefit at least as much from increased cooperation with industry. They need constant contact with the real world if they are to carry out their tasks satisfactorily. University research and development can be given a considerable impetus by industry. The development and implementation of new technologies gives rise to a great deal of mutual feedback which blurs the boundaries between pure research,

applied research and practical application. On the one hand, pure research often produces 'by-products' which are of immediate practical use; on the other, applied research and actual practice are increasingly uncovering fresh areas for pure research. Without active, stimulating links with industry, our universities can then scarcely consolidate and increase their international competitiveness in the long term.

By gearing themselves to what is actually going on in industry, the universities can considerably expand their horizons, and this applies not only to research and development, but also to teaching and further training. The motivation, academic success and job prospects of students are largely determined by how well university teaching and industrial practice are geared to each other. Cooperation between the universities and industry can therefore contribute a great deal to the effectiveness of university training.

It goes without saying that the same applies to further training. With the constant, short-term changes, particularly with the new technologies, further training is becoming more and more vital - for the individual worker as well as for the undertaking as a whole. Unless the workers in particular constantly adapt their skills to scientific and technological changes, undertakings will scarcely be able to operate and compete in the future. The universities have an important role to play in the field of further training as well, and they can do this only through cooperation with industry, i.e. with the undertakings, but also with the workers in particular. Experience, requirements and practical possibilities must always be taken into account.

Ladies and gentlemen, let me make an interim assessment on the basis of these general introductory points.

First:

Cooperation between universities and industry is equally important to both partners.

Second:

With the more intensive cooperation sought by the Federal Government, there can and should be no sharp division between the specific interests of the employers on the one hand and of the workers on the other.

In this case the interests of all parties are closely interlinked. The aims that cooperation between universities and industry must and, with proper planning, can serve concern everyone - workers as well as employers: competitiveness of universities and industry, safeguarding of jobs, jobs with a human dimension, efficiency of university training, provision of further training geared to the future and the assessment of the consequences of the new technologies. For these reasons, the Federal Government is in no doubt that the process of promoting cooperation between universities and industry must involve undertakings, and associations and organisations representing the two sides of industry.

PART 2

Industry, commerce and the craft trades have long cooperated with the universities in many ways. Even if a great deal can still be improved, we have here, at least in some respects, well-developed relations with an established tradition. As far as cooperation between the universities and the workers and their representatives, the trade unions, is concerned, however, the situation is far less satisfactory.

In the past, the universities have not paid enough attention to the workforce/unions as partners in cooperation. Whereas contacts with industry - e.g. contract research - have grown steadily, cooperation with trade unions - e.g. on research into workers' working and living conditions - has not kept pace. The universities must pay more attention to workers' interests. They must be recognised as a target group in the same way as industry and the craft sector, for here too there is a need for a transfer of knowledge. It should be clear from what I have already said that workers are just as much affected as employers by technical innovations and their application in practice. At the same time workers, like small and medium-sized undertakings, do not have a general insight into research and its developments. The chance of exploiting the results of university work and in turn submitting questions for examination by the universities is comparatively small, if not even smaller than in the case of small and medium-sized undertakings.

If cooperation between universities and unions is not all it should be, the universities themselves as well as the workers suffer. I have already stressed that universities must gear themselves to actual practice in all fields - research, teaching and further training - if they are to

carry out their tasks in an effective and responsible manner. This requirement, however, applies in respect of all social groups. Universities should be informed of the research, development, training and further training requirements of not just certain sections, but the whole of industry and the working world. In other words, they must also take account of the workers' viewpoint and gear themselves to their specific situation. If this is not the case, then the desired broadening of their horizon will to some extent stop halfway. Many of the stimuli that university research, teaching and further training can receive from society at large would not be used.

The conclusion is that cooperation between universities, workers and workers' representatives must be stepped up. In pursuing this aim, a two-pronged approach should be adopted in our view.

First, both sides, universities as well as trade unions, must do away with some of the prejudice and resentment which has hitherto stood in the way of closer cooperation. Gustav Fehrenbach has said that university academics regarded workers as "beings from another planet". This may be somewhat of an exaggeration; it cannot be denied, however, that there is something akin to a fear of contact and this applies not only to the universities but also to workers and their representatives. On both sides there is a need for more openness which is free of prejudice. Universities, workers and trade unions must become aware of the many mutual advantages which could come from closer contacts.

In addition to the, as it were, psychological preparations that the universities and trade unions have to make, specific supporting measures are necessary to promote cooperation between these two sides. For this reason, the Federal Government has since 1982 been supporting the research project being carried out by the DGB (German Trade Union Federation) on the 'regional opening up of university research for workers' problems by means of cooperation units'.

The DGB project examined how the exchange of knowledge and information between universities and trade unions can be intensified and developed for the benefit of both sides. In the forefront are topics which are of special interests to workers:

- questions of regional and structural policy and the related effects of structural problems on the working and living conditions in the region;

- political, economic and social consequences of the introduction of new technologies in the region;
- working conditions and job safety, harmful working materials.

On the basis of what has been learnt from the project, model recommendations are to be developed on the promotion of cooperation between universities and trade unions which can then be used in an appropriate way in discussions held by bodies concerned with university and science policy.

The structure of this project, in particular, has already proved to be exemplary. So-called cooperation units have been set up in five university centres, each under different regional and organisational conditions. University academics and workers' representatives work together in these units. They establish the research requirements of the region in question, encourage research projects, assess projects which have been completed and ensure that the results are communicated to a wider public. Another task of those in the cooperation units is to analyse the university/trade union communication process and develop appropriate long-term forms of organisation.

This work on the spot is supported by regional advisory councils on which universities and trade unions have equal representation. The coordination and comparative assessment of regional projects is the responsibility of a supraregional coordination unit in the DGB Federal governing body, which also assumes the role of project management. The DGB governing body is assisted in this task by a supraregional advisory council consisting of university and trade union representatives.

The research project focused on the formulation and testing of methods of transferring knowledge for workers. It was extremely important for the success of the joint venture that the cooperation units should be incorporated into the regional trade union structure. Only under these conditions could the research requirements of representatives at company level be established and communicated to the universities.

Because of the short time that the project has been running, we have as yet only a rudimentary impression of the effects of cooperation on university research. It is, however, clear that the participation of workers and their representatives has raised new questions in the research institutions concerned.

The overall picture is that the relations between the university and workers in the region have changed radically.

More specifically:

- workers have learned to present their own demands and new questions to academics,
- trade unions have received responses from academics on a wide range of questions,
- academics have learned to tackle new problem areas,
- joint efforts have been made to find new forms of cooperation not only in defining the problem but also in publishing and using the research results,
- through alignment on current practice and inter-disciplinary cooperation, research has taken on new social dimensions,
- a great deal of effort has been expended on mediation and translation which has made cooperation between university and trade unions beneficial for both sides.

The project has removed many of the prejudices in the universities against the trade unions, and vice versa. Albeit not without misunderstandings and frictions, the justified interests of workers in the opening up of the universities have been recognised.

However, the universities must make more effort to inform workers or the trade unions representing them of the research possibilities and results and open up university research to society at large. The transfer of knowledge must not be restricted to undertakings.

The DGB cooperation project ends in August this year. It was initially limited to a period of three years. It then became clear, however, that this was too short a time in which to gather knowledge. Therefore the Federal Ministry for Education and Science supported a further two-year period. The main topics under consideration are increased involvement of specialised institutes of higher education in the cooperation process, balance between regional cooperation on certain topics on the one hand and supraregional cooperation on the other, and further cooperation with other transfer institutions to extend knowledge on the effectiveness of the various instruments of cooperation.

Whether cooperation can continue to receive public support when the Federal assistance ends depends on the Länder. On this question there is agreement between all parties.

The Federal Government has only limited powers with regard to universities and therefore concentrates its efforts on improving the general framework conditions and the infrastructure requirements for cooperation between universities and industry in the broadest sense. The support for a five-year pilot stage to develop relations between universities and trade unions also falls into this context.

It is in the interests of the Federal Government that the extremely promising initiatives started here should be continued in some way or another.

b) COOPERATION AS A SPECIAL AND PARTICULARLY ESSENTIAL
STIMULUS FOR RESEARCH - UNIVERSITY EXPERIENCE

Professor Dr. Franz NEUMANN
Präsident, Gesamthochschule Kassel, Bundesrepublik Deutschland

Summary

Scientific research has to take account of the human dimension if it is to avoid socially undesirable consequences. Universities must therefore be more open than they have been in the past to workers' needs.

Referring to the experiences of the University/Trade Union Cooperation Centre in Kassel (FRG), one of the five centres set up at the request of the German Trade Union Confederation (DGB) and financed by the Federal Government, Dr. Neumann defines a series of conditions with which the various forms of cooperation must comply if they are to promote both research and transfers of knowledge to the benefit of the workers.

1. BACKGROUND

It is widely agreed that science occupies a high rank in social development. However, manifold fears as well as far-reaching hopes are linked to its application. Particularly in the last few years the reputation enjoyed by science has suffered severe setbacks. An increasing number of negative aspects of modern life are being laid at the door of science and scientists - and not without reason, I feel. The further development of teaching and research must be geared to human interests, so as to prevent aberrations and undesirable social consequences. To this end it is essential that the universities take a greater interest in the needs of working people.

Guidelines to this end could be derived from a dialogue between scientists and trade unionists. This is the purpose of the office for cooperation between the universities and the trade unions in Kassel. It is one of five such offices - the others are in Dortmund, Oldenburg, Hamburg

and Tübingen - operating with financial assistance from the Federal Ministry of Education and Science at the request of the German Trade Union Federation (DGB).

Ever since it was founded in 1971, there has been considerable interest at the University of Kassel in gearing science to the interests of working people, since we are trying to put into effect the ideas of a democratic university committed to humanity and peace. These are related, on the one hand, to organisational and staff factors and, on the other, to content-oriented imperatives.

2. EXPERIENCE THUS FAR

Already existing cooperation activities acquired a long-term and properly staffed form with the setting up of the office for cooperation between the universities and the unions. Its main concern is to initiate research projects and disseminate their findings through further training. The work of the Kassel office has concentrated on three main issues:

1. Development and application of new information technologies;
2. Worker-oriented regional and structural policy;
3. History of the regional workers' movement.

So far 17 projects related to these fields have been launched, some of which are still under way. It was no coincidence that the projects concentrated on these fields, for the effects of research on the living and working conditions of people in the region are the most evident.

Allow me to say a few words about what we have learned about the first two points.

2.1 Consequences and Organisation of Technology

The prospects opened up in particular by the 'new technologies', especially information technology, have serious consequences for the structure of work organisation at the level of both the undertaking and society as a whole. For the future planning of work processes at individual undertaking level and for the economy as a whole these trends require a high degree of planning, organisation and qualification, which can be determined with the help of scientific research and translated into appropriate

measures at individual undertaking level and for the economy as a whole. Forward-looking research into the possible consequences of technology and alternative organisation of technology is among the most important scientific challenges. Such endeavours may be grouped together under the heading of 'work-oriented technology research'. The following are examples of work-oriented research into the consequences and organisation of technology:

(a) Research into appropriate work organisation and qualification in combination with automated and non-automated activities: the present situation as regards technological development and its consequences for the organisation of work is marked by the dominance of the employer's viewpoint. The result is a virtually 'organic' process of rationalisation. A task so far neglected by research is that of structuring the workplace in such a way that automated and non-automated activities are combined to achieve both rationalisation effects and gains in human creativity potential in services and manufacture.

(b) Research into the interaction of working and private life under the influence of technological development:

A substantial consequence of the current development in information and communications technology is the possible decentralisation of information-related workplaces on the one hand and their linkage, on the other hand, with the whole range of monitoring facilities. This leads to a breaking of the link between work as such and its organisation and thus to more flexible work patterns. Overall, the dividing line between work and leisure is thus rendered more fluid. The current discussion on computer-based homeworking is a step in this direction. At present there is an almost total lack of basic research in this field.

(c) Research into cultural change under the influence of technological developments:

The computer's advance into more and more areas of work and life is not only blurring the traditional boundaries between working and private life, but also bringing about a general change in work and

leisure culture. The visible signs of this cultural change are already being dealt with extensively in both fiction and non-fiction, but there has been practically no empirical research into it.

- (d) Research into the evolution of guidance and continued training concepts:

Scientifically based concepts for guidance and continued training are needed to master technological advances and their consequences for the organisation of work. The purpose of such concepts is not only to develop action strategies for the day-to-day running of an undertaking, but also to analyse the prerequisites which must be met in order to combine social science and engineering science know-how in planning and controlling technical change and in mastering its consequences in the individual undertaking and in the economy as a whole.

The flexibility and openness of present-day information technology makes it possible to formulate concrete demands from the worker's viewpoint on the thrust of technical development. This also leads to the demand that technical change be pointed in a socially acceptable direction.

The first task of research in this field is to develop organisational criteria and support the application of appropriate technical solutions. Such research is dependent on cooperation with employees and their unions.

Questions which might be dealt with are:

- (a) How can work be structured in such a way as to minimise stress and maximise skill development in the context of increasing integration and networking of technical applications in factories and offices?
- (b) How should certain technologies be developed with a view to improving opportunities for minimising stress and maximising skill development?
- (c) What concrete organisational alternatives are there to centrally monitored and hierarchical work structures?
- (d) What form might be given to humane work organisation concepts for comprehensive complex work systems?
- (e) How might such concepts and organisational approaches taking account of employees' interests be implemented politically and legally?

2.2 Work in the Region

North Hessen, the hinterland of the comprehensive university of Kassel and its cooperation activities is a structurally weak region, the main characteristics of which are:

- above-average unemployment (compared with the average for the Land of Hessen and for the Federal Republic as a whole);
- high migration figures, particularly of younger skilled employees;
- relatively low level of workers' income;
- underdeveloped industrial structure or industrial mono-structure;
- apart from two or three exceptions, the headquarters of the undertakings established in the region are not located there;
- preponderance of small and medium-sized undertakings;
- above-average number of undertaking closures;
- inadequate infrastructure in a number of areas;
- local authorities heavily in debt (by comparison with South Hessen, for example);
- very little research and development potential.

It is likely that the economic imbalance between North and South Hessen will continue to grow. In the long term this region will be unable - out of its own resources - to achieve a more balanced economic structure, the needed improvements in its infrastructure and, above all, a reduction in its unemployment. Research in the fields referred to earlier is necessary if increased aid is to be obtained from the Land and Federal authorities and, above all, if concrete solutions to the region's problems are to be found.

2.3 Cooperation Activities

The purpose of cooperation is to promote research initiatives and cross-fertilisation benefits for employees, works and staff councils, employees' representatives and trade unions. This involves:

- providing impulses for interdisciplinary research into the prerequisites for and consequences of technical and social change;
- providing ideas for research, development and implementation of socially and environmentally acceptable concepts of work organisation.

- contributing to the initiation and implementation of regional development concepts with employment policy aims;
- utilisation of the specific problem-solving potential inherent in cooperation between science and employees and their unions.

Special efforts are needed to master these tasks. Suitable forms of cooperation must be found in order to set the process of cross-fertilisation in motion and to ensure continuity.

This involves:

- organisation of research in the fields referred to earlier and appropriate forms of participation by the persons concerned;
- planning and implementation of further training courses for employees related in content to the research endeavours;
- provision of guidance for employees, particularly works and staff council members;
- holding of meetings devoted to information on research findings and the development of new research questions in joint discussions between researchers and practitioners;
- setting up and running of joint working parties.

Cross-fertilisation is a two-way process; it involves, on the one hand, implementing or appropriately processing the findings of science and research and, on the other, converting and processing practical questions for scientific treatment. This process can help to broaden the content spectrum of university research and to give those concerned by the findings of such research greater opportunity to participate in it. An intensive dialogue between researchers and trade unionists has developed in the individual projects and a regular exchange of ideas and information is important for their implementation. It is not a matter of carrying out research commissioned by the unions, but of learning from each other. This is why the development of accompanying further training programmes is particularly important, since in this way participation by employees in research processes is made possible.

3. FUTURE PROSPECTS

The question of permanent provision for cooperation remains unclarified. In 1986, the Hessian Land Government said in its structural policy report on North Hessen that it intended to finance the office for cooperation between the DGB and the University of Kassel as a permanent Land institution when the present financing came to an end at the end of August 1987. In subsequent talks between the DGB executive board for Hessen and the Hessian Ministry of Science, agreement was reached on further arrangements: the cooperation office would function as a cross-fertilisation body oriented towards employees' interests and problems within an organisation still to be set up. The members of this organisation would be the DGB Land executive board, the North Hessen local executive boards and the University of Kassel. Both sides, the DGB and the university, would have an equal number of votes.

All concerned have agreed to this procedure and voted on draft statutes. An application for financial aid has been submitted to the Land Government. We all know that its chances of being approved have not increased now that the CDU and the FDP are in power in Hessen. But apart from the general transfer of technology, which we have considerably extended at the University of Kassel, we need work-oriented technology research. I therefore support all endeavours to make the cooperation office a permanent state-financed body. The basic financing for our technology transfer endeavours comes from the state. The University's know-how, which is passed on within the region in particular, brings its commissions from business, industry, trade and the craft industries. The university's researchers make an effort to obtain these projects since they are paid for. Obviously, industry is less enthusiastic about projects involving work-oriented technology research.

The input of ideas from the unions into the university is particularly important for our own development, for example in our 'Mensch - Umwelt - Technik' (MUT - man - environment - technology) centre. It is not a matter of adopting something out of a trade union programme as a pattern for scientific thought. The development of scientific theory is not the same as wage negotiations. Only by stating explicitly the interests impinging upon research can one prevent it being subject to a multiplicity of covert interest ties. In this way cooperation can liberate science from limited perceptions, interests and compulsions. That is why cooperation is a stimulus particularly necessary to research.

c) TRADE UNION EXPERIENCE

Dr. Jürgen WEISSBACH

Vizepräsident

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Summary

With the aid of examples, Dr. Weissbach states that the trade unions are satisfied with research/trade union cooperation which they feel has complied with the objectives assigned to it and that they wish to continue this experiment which has had positive effects at national, regional and company level. The European dimension will amplify the advantages of cooperation and speed up the process of rapprochement between trade unions and scientists.

Furthermore, Dr. Weissbach rejects the criticism that research/trade union cooperation financed by the public authorities threatens the impartiality of research.

Cooperation between trade unions and higher education in the Federal Republic, as seen by the trade unions, is an extremely complex subject, involving as it does, contacts between two very different types of social institutions. One should not forget that relations between the labour movement or individual trade unions and universities/academics have, for many different reasons, always been marked by a considerable distance. This is still true today.¹

Students and scientists only began to take an interest in trade unions with the expansion of the universities in the 1960s and the educational reforms which produced some degree of democratisation in higher education.

¹ See 'Regional cooperation between universities and trade unions' - report by DGB Chairman/Hans-Böckler Foundation, Düsseldorf, 1986 - particularly pp.18, 61, 365.

The unions, for their part, put themselves forward as representing also the interests of academics. It was during this period that the DGB decided to include the universities in its programme.

In the early 1970s cooperation between universities and trade unions in the sphere of research and further education for workers was likewise discussed. A number of cooperation agreements were made: in Bremen, between the university and workers' representatives; in Oldenburg, between the university on the one hand and the Niedersachsen branch of the DGB and the Trade Union Education Association 'Arbeit und Leben' on the other. Similar agreements in Bochum, the Saarland and Berlin followed.

These cooperation agreements provoked sharp attacks on the unions, on both legal and political grounds, by conservative politicians and academics. The agreements, it was claimed, were a threat to fundamental academic freedom. I do not want to go into any detail here; the problem has been solved, at least officially. For people from other countries the whole issue must be bewildering, to say the least.²

I should like to mention briefly the actual content of the agreements, e.g. the cooperation accord at Oldenburg: the university accepts, within its legal framework, to treat problems of employees engaged in research, teaching and studying, with due regard to social, economic and cultural aspects. The DGB and Arbeit und Leben on their part are prepared to support the university in this. The agreement goes on to state that, "Academic problems and conditions concerning university staff must be dealt with in a way acceptable to the staff".

Neither the actual text of the agreement, which tends to be similar for most universities, nor the content as such, present a threat to academic freedom: the unions are interested in academic work and its results; they might wish to introduce certain themes and raise certain questions in this work. Consequences in terms of labour relations, however, are a matter for the bodies set up for this purpose. The unions support the principle of academic freedom, both for universities and individual academics. They in fact wish to protect academic work from excessive interference on the part

² See also Michael Uechtritz, Cooperation agreements between universities and trade unions. The agreement between the universities and labour organisations in Bremen, Oldenburg, Bochum and Saarbrücken, Berlin 1983, and the legal opinion expressed by Lawyer Peter Hauck on the cooperation agreement Oldenburg-Marburg, Oldenburg 1983.

of vested interests and the partial dependence of academic pursuits on financial backers. Consequently, given the aims of the trade union movement, cooperation with universities can give the latter greater independence.

I think I should make it quite clear at this stage that the German trade union movement is well aware of the fact that academic work is no substitute for union policy, and that, for a number of reasons, it is far from overrating academic work.

The DGB has positive experiences with cooperation based on proper legal frameworks. The cooperation in Bremen and Bochum is supported by public funds; there is also the project of the Federal Minister for Education and Science and the Federal President of the DGB, which has already been mentioned by Mr. Swatek and Mr. Neumann. The DGB would like to see cooperation of this kind continued with public funding; it would above all welcome an opening up on the part of all general and technical universities to include problems related to labour and employment in research, study and further education. Although the usefulness of cooperation between universities and trade unions is now recognised, appropriate financial means to support it still presents considerable problems. The central authorities are giving disproportionate support in terms of money and staff for cooperation between universities and private enterprise, which in terms of both personnel and funding, is based on entirely different criteria. The extent to which many universities and academics are prepared to discuss issues and problems relating to the labour market in research, study and further education has increased. Cooperation schemes, however, are still suffering from lack of staff and union funding for research. One - all the more significant - exception is the 'cooperation schemes' project of the Federal Ministry for Education and Science, for which we are duly grateful. It has provided important impulses for the improvement and strengthening of cooperation between universities and trade unions.

The unions are determined to continue their efforts. The objectives they are seeking can be summarised as follows:

- to tackle regional, but also national, problems relating to workers, which require an academic approach and solution, together with the universities and academics;
- to contribute to the solution of concrete industrial problems by academic counselling or research;

- to improve the dissemination of academic knowledge via trade union seminars;
- to extend the scope of research in higher education and improve academic work by including trade union-related issues and experiences;
- to give students and new generations of researchers the sort of training that would also make them aware of the problems of workers and unions.

The unions will continue down this road since experience at national, regional and industry level has been positive. I would like to illustrate this from a trade union point of view by giving you some examples relating to unhealthy working conditions and work load, as well as structural, economic and labour market policies; there are examples from other areas, such as policy on technology, social issues, labour history, etc.³

UNHEALTHY WORKING CONDITIONS AND WORK LOAD:

- Thanks to cooperation between IG Metall, a university and the factories inspectorate - but in the face of management opposition - asbestos was removed from the production process of a certain firm, thereby achieving conversion at an early stage and anticipating a general ban on asbestos. Output was furthermore increased and new jobs created.
- Cooperation between IG Chemie - Papier - Keramik, a university institute and management made it possible to remove a dangerous substance from the production process of another firm and replace it with an alternative substance. This development had started with complaints about health problems, on which the works council and the union had then acted.

The mutual trust which has developed as a result of cooperation with academics has created a basis for further cooperation within the works council which extends to the assessment of damage to health on the part of the health inspectorate.

³ I would like to refer in particular to a long list of examples described in detail in the report mentioned in footnote 1.

"The weight of bricks in bricklaying is growing all the time, the risk to health is considerable, and many bricklayers have to give up their jobs after as little as five years." This is, in short, the way a representative from IG Bau-Steine-Erden described the problem to a cooperation committee. A systematic, long-term, inter-disciplinary research approach followed, which started with two doctoral theses. Bricklayers were actively involved in the research process. What particularly struck the union was that the academics involved wanted to see remedial action taken before the final results were known. In the experience of most workers such action is rarely taken before the harmful effect has been scientifically confirmed.

In some cases, academics make their own, independent, discoveries and study them with the involvement of the persons concerned. This was the case with the working conditions of railway engine drivers (ranging from bad driving seats to visibility problems). The study has generated considerable public interest and is of great significance for the trade unions' representative role.

There are many other examples I could mention in addition to working conditions, health and safety, dangerous substances, etc. Research of a more fundamental nature has also been done, e.g. on shift work. All research in this area must be inter-disciplinary and involve the workers concerned. Workers' skills and academic knowledge from various disciplines should complement each other.⁴

STRUCTURAL, ECONOMIC AND LABOUR MARKET POLICIES

Here again, let me give some examples.

In one case an attempt was made to save jobs in a firm threatened with closure. The technological, industrial, economic and further training aspects of possible conversion to another product were discussed between the works council and a number of mediators. Academics representing different disciplines and universities were involved on an equal basis, according to their skills. This promising project was turned down by the government and employers' representatives on political and ideological grounds. The lesson workers and unions learnt was that "...they do not have to passively accept

⁴ See also 'Regional cooperation between universities and trade unions' pp 182-205, 311, etc., 386-394.

every job loss on what are claimed to be managerial grounds; that they are capable of putting forward their own ideas for saving jobs. The workers involved have, together with academics, developed their own alternative proposals, thereby showing that they are quite capable, with expert/academic assistance, to develop their own management strategy."⁵

In another case, a works council set out to develop its own managerial strategy when its firm was facing bankruptcy, in order to save as many jobs as possible, in accordance with its rights under the terms of co-determination. Realising that it could not do so alone, it initiated a detailed discussion with an academic specialist. As a result, the effectiveness of the works council and of the local union, in terms of co-determination, were considerably enhanced.

Here too, I could give many examples: regional industrial and structural analyses have been made, work has been done on energy policy, the introduction of new technologies, including job reorganisation; the reprocessing of raw materials; communications policies and environmental technology.

OTHER TOPICS

Many new approaches have been developed in cooperation with academic disciplines closer to the trade unions' traditional areas: industrial sociology, labour law, social policy, history, education. A particularly significant contribution was made in the area of regional historical research (Third Reich, concentration camps, industrial history, regional labour history, etc.).

At this stage, before summing up, I would like to summarise the experience of consulted trade union officials and works councils, and quote some of them.⁶ According to an official in the metal-working industry, "There is a considerable degree of prejudice in the trade union movement as regards the academic approach; this is to a large extent justified - I don't mind admitting that I share it. Generally speaking, academics have not exactly served the trade union and labour movement well; one could even say

⁵ See 'Regional cooperation between universities and trade unions', p.313.

⁶ Report 'Regional cooperation between universities and trade unions', pp. 339-347.

that they have done a great deal of damage in the past. It is certainly true that as far as the trade union movement is concerned, we have to rid ourselves of a great deal of prejudice and simply recognise that we cannot do without expert knowledge or academics."

Officials and works councils want definite information about the social implications of technology and production processes; they want to see the human dimension of industry built into a scientific approach. They know that without consultation with experts they would not have succeeded in defending their interests with the same success, and that they would have had to abandon many of their ideas and ambitions. Union representatives are, however, well aware that academics who get involved in this form of cooperation, can be drawn into conflicts between the two sides of industry. Trade unions and workers are nonetheless entitled to cooperation with universities and academics.

SUMMARY AND PROSPECTS

Generally speaking, the most important aspect of all this as far as the workers are concerned is the fact they they too can make use of the resources of the universities, which are after all partly financed out of taxes paid by the workers. The social gap and helplessness in relation to academics is being reduced. Union officials are learning how to talk to them. They are finding out what the advantages and disadvantages are; they are getting to know different methods and are better able to judge what kind of problems should be discussed with academics and which problems can be solved by working together with them. We shall therefore try to continue cooperation, if possible with all universities - be they general or technical. Unfortunately, universities lack the necessary staff and funding for these projects. Consequently, this form of cooperation is still at an early stage, particularly since the infrastructure on the trade union side still needs to be improved. Compared to fifteen years ago, however, the situation now looks promising.

The exchange of experience between different countries at this meeting is another important step forward. Workers in Europe are faced with increasingly scientific techniques and with more and more restrictions on the environment and quality of work which can only be scientifically assessed.

These are problems we all share. In terms of European cooperation between trade unions on the one hand, and universities and research centres on the other, we should therefore try to achieve positive results in individual countries, to publicise these and transfer them to other countries. It is not necessary for every trade union movement to start from scratch, in many cases they should only have to apply the experience of others in their own countries. What we want is a situation in which trade unions agree on areas in which they lack information, research, and contact with academics; they should then propose European programmes designed to improve this situation. Finally, there are also international problems, such as shipping, the transport of goods, the import and export of dangerous substances, the joint definition of criteria for work organisation, etc. A European association would therefore definitely be a step in the right direction, to speed up the necessary process of closer cooperation between trade unions and the academic world.

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COOPERATION BETWEEN TRADE UNIONS AND CENTRES OF RESEARCH IN LONDON:
THE ROLE OF THE GREATER LONDON ENTERPRISE BOARD

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Summary

The Greater London Enterprise Board (GLEB) is a public limited liability company operating in the private sector with the aim of promoting technological development whilst securing the best possible social benefits and a high level of job creation. Cooperation between research centres and trade unions is therefore not the leading priority of this socially oriented Local Employment Initiative. Nonetheless, cooperation of this type does exist by virtue of the representation of the trade unions on the Board of Directors as well as on the boards of the subsidiary companies, notably GLE-Technology, whose main objective is to devise a research and development programme.

Over the past ten years a quarter of a million jobs have been lost in the manufacturing industries in London. This fall is equal to two thirds of the current number of unemployed people in London. The loss of jobs was particularly severe in the inner areas of the capital, which now have unemployment rates in excess of 15% of the workforce.

One of the responses to the very rapid process of industrial restructuring that has been under way over the past fifteen years was the creation of enterprise boards, whose general purpose would be to intervene in that process in order to secure certain social objectives. Enterprise boards were established in the period 1981-83 in five regions of England by the regional tier of local government. The Greater London Enterprise Board was established by the Greater London Council, and while the GLC has been

abolished by the Government together with the other regional organs of local government which cover the large conurbations, the enterprise boards have managed to survive their parents' demise.

The creation of the enterprise boards was the result of a political initiative taken by the Labour Party in collaboration with the major trade unions. It followed a current of thought within the Labour Party which saw a need to create public institutions which would intervene in the private sector and would act both to promote modernisation and technological development and would achieve a degree of public regulation and accountability over the process of change in order to reduce the social costs of that change and to ensure that employees were able to participate in the benefits.

The structure and constitution of GLEB has enabled us to build strong links with a number of universities, polytechnics and other research and training centres and with trade unions, particularly at regional and local level. These links have enabled us to initiate a number of research and development programmes which respond to the expressed needs and concerns of trade unions and which involve many researchers and others from the academic community. Our principal role in this regard is as a catalyst, using the knowledge and skills of a relatively small number of our own staff to direct and mobilise the resources of both the public and private sectors behind projects or research programmes which offer positive social benefits.

The formal structure of GLEB is as a limited company, established under company law, wholly owned by a group of local government authorities in London. It is thus wholly publicly owned, and is accountable through its main board of directors on which each of the member local authorities has one representative-director, a position which is filled by an elected councillor. There are in addition three directorships reserved for representatives of the regional trade union organisation SERTUC (South Eastern Region of the Trade Union Congress) and a limited number of additional directorships for people selected as individuals to bring specific types of skill and experience to bear to the decision-making process (Figure 1).

The board of directors determine the major policy decisions and sets a framework within which the various subsidiary companies operate. The major policy decisions are thus made by elected public representatives together

with trade union representatives and certain others. Being publicly owned and accountable enables it to work with a range of other public sector bodies with a facility denied generally to private investment organisations.

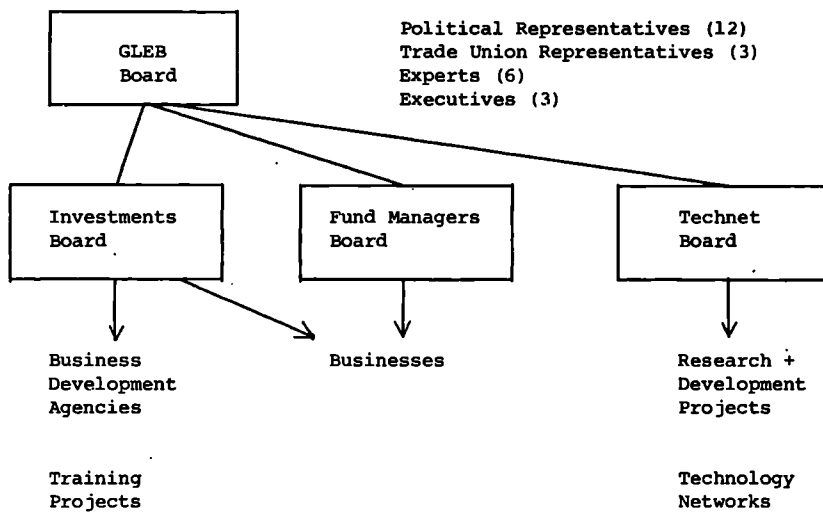


Fig. 1.

Most of the detailed operational decisions are made within the (wholly-owned) subsidiary companies, each specialising in a particular area and having on their respective boards of directors individuals chosen for their particular skills and expertise. Subsidiaries include GLE Technology - responsible for research and development projects, GLE Investments - responsible for corporate and property investments using GLE's own funds, GLE Fund Managers - responsible for managing private investment funds, and GLE Training - responsible for managing and providing a range of training courses in basic skills and business skills.

GREATER LONDON ENTERPRISE TECHNOLOGY

The principal purposes of this subsidiary company are to manage a research and development programme and to provide policy coordination and support to the Technology Networks. The research and development programme seeks to develop new products or technologies which would be transferred to companies in the London area and thereby to support the eventual creation of employment. Small sums are made available as initial grants, to finance the production of a feasibility study and a business plan, followed by a more substantial application for funds, which will be appraised both in terms of technical coherence and commercial potential. Applications will be assessed by a panel of experts combining technical and scientific skills and people with business expertise. Projects are identified principally through the informal network of contacts that has been built up between GLEB and a variety of research establishments, and particularly through the involvement on the board of GLE Technology of a number of expert directors with experience in the development and application of products and technologies.

One such project is the design and development of a 'human centred' CAM (Computer Aided Manufacturing) system, that is, one that is designed to build upon human intelligence and so design the controlled system and the interface that the human being operating the system is enabled and required to exercise selective judgement; the aim is for the human being to control the machine, rather than the other way round. A collaborative programme has been developed involving representatives of the engineering trade unions in Britain and West Germany in the design of the equipment and involving too the Manchester University of Science and Technology, the Technical University of Denmark and the University of Bremen.

This is now the basis of a £5 million ESPRIT project to design and build the world's first computer integrated human centred manufacturing system in which GLEB is the principal contractor.

The technology networks are a resource which can be used by trade unionists, community organisations or members of the public to obtain access to technical advice and other forms of practical assistance in the development of products on a low cost basis. The networks are each autonomous organisations funded by municipal authorities and accountable to a board comprising councillors, representatives of research establishments, trade unionists and community representatives. As the name implies, the

purpose is to 'network' the skills available in research establishments and in the community in order to generate products or services which are useful to the community and which create employment.

There are two basic kinds of networks, those covering a particular geographical area and those specialising in a particular field such as transportation or energy conservation. Links with companies requiring assistance with research or product development or who can manufacture new products developed in the network are also encouraged. A wide range of products have been developed in the networks, but of particular interest have been a range of products designed to meet the needs of people with physical disabilities, and projects developed in conjunction with hospitals, including a computer-based diagnostic system and a mobile cardiovascular analysis system. The collaboration between GLEB and research centres and other public bodies such as the hospitals has been greatly assisted by GLEB's status as a publicly controlled body with a commitment to social objectives such as the creation of employment and the design of products and technologies which respect human needs.

GREATER LONDON ENTERPRISE INVESTMENTS

This subsidiary of the enterprise board has as its principal function the investment in small to medium-sized businesses in the London area. In spite of the overdevelopment of London as a world financial centre smaller firms find it difficult to obtain risk capital in amounts in the range £100 000 to £500 000 as the costs of servicing this lower end of the capital market make it unattractive to most private financial institutions. It is also the case that among these smaller companies, employing perhaps 20-50 employees, conditions of employment are often poor, with an absence of trade unionisation and in many cases an ignorance of basic legal requirements in respect of employment conditions and health and safety requirements.

The promotion of small businesses as a solution to unemployment has been a prominent feature of the present Government's policies, with tripartism and the search for consensus on economic policies giving way to a series of legislative measures aimed at reducing the power of trade unions, coupled with an appeal to a new 'enterprise culture'. The position of GLEB in the new constellation must be considered at least ambiguous, with its origins in the Labour Party and its close links with the trade unions and the commitment to social objectives in the restructuring of industry.

However, the Labour Party, particularly through its involvement in local government, has supported measures to encourage the formation and growth of smaller businesses while seeking to insure against the degradation of working conditions that might follow the substitution of this type of employment for the larger, regulated and unionised workplaces that they replace. These problems present themselves sharply to the trade unions, for whom the unionisation of the smaller firms sector becomes more important both as a source of membership and to protect other employees from being undercut.

In its approach to investment in smaller firms, GLEB seeks to apply a range of skills and resources to ensure that the business is commercially strong and that it meets a reasonable basic standard of conditions of employment. As well as providing investment, GLEB will examine the commercial aspects of the business and seek to correct for weaknesses in management, marketing, financial systems or production systems. In some cases GLEB staff will be seconded to manage the business while local replacement management is being found or trained. GLEB staff will also address the personnel systems in operation in order to introduce good practice, as well as to comply with the law. Equal opportunities issues will be addressed. The training needs of employees and management will also be assessed and training provided either by GLEB staff or by establishing contact with educational or other bodies offering the appropriate courses.

In developing these projects, GLEB will contact the relevant trade union to consult on membership recruitment, personnel and training issues and will of course encourage employees in investee companies to join the union.

For some of its business investment projects, GLEB has been able to draw upon the specialist skills of people in universities and polytechnics who are in some cases contracted to and closely involved in the development of the project. In other cases GLEB has obtained specialist advice from research bodies on a consultancy basis. In these cases GLEB's status as a public agency with accepted social purposes has facilitated these exchanges.

CONCLUSION

Enterprise boards have broken new ground in the UK as agencies responsible to local government but working in the private commercial sector. As a matter of policy they have adopted social aims which go beyond

simply securing a commercial return on investment to include the creation of employment, particularly in areas of greater unemployment and deprivation. They have also had regard to the quality of that employment and have sought to establish models of good practice in respect of employment conditions and the offering of equality of opportunity for all.

They have been developed in close collaboration with trade unions and have developed a number of innovatory projects which reflect the concerns of trade unions in a period of rapid restructuring and where that process appears to undermine many of the gains that have been secured through trade union organisation. By being involved in investment and in supporting the development of businesses, the enterprise board is required to develop a range of expertise which takes it to the heart of the operation of a business. It is early days yet to assess the achievements of enterprise boards but they have to date shown that it is possible to assist the creation of employment in the smaller firms sector without accepting the poor employment conditions often associated with this type of firm.

Session II

THE ROLE OF THE REGIONAL TRADE UNIONS AT THE IDEON SCIENCE PARK,
LUND/MALMÖ UNIVERSITY CAMPUS, SWEDEN

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Summary

The student unrest of 1968 gave rise to the establishment of closer ties between the universities and the trade unions in Sweden, firstly in the training field, then in the research field. Mr. Ulf Andersson explains moreover that, due to the experience of the IDEON science park, the trade unions are interested in establishing close contacts with scientific and research centres, the new technology giving rise not only to new modes of production and new products but also to a transformation of society, a new type of industrial culture and - who knows - a new type of trade unionism.

BACKGROUND

I have been carrying out R&D projects at the University of Lund and Malmö since 1970. This university is the biggest in Scandinavia, with eight faculties and about 33 000 people. We have some 23 000 students and the annual turnover is more than 400 million US dollars. The university was founded in 1666 and the technical institute established in the 1960s. In carrying out R&D projects together with scientists, lecturers and students, it has, from my point of view, been essential to place this work in a broader perspective of interaction between university and society.

In the late 1960s the student revolution focused on the relationship between universities and society. The universities in Sweden underwent a reorganisation. The trade unions then showed an active interest in the universities as a resource. It was felt that the trade unions also should have easier access to the results of scientific research and to higher education.

UNIVERSITY AND THE TRADE UNIONS

Representatives of the trade unions now sit on various university boards and committees so as to ensure closer interaction between the university and the surrounding society.

In the mid-1970s we started to develop courses at the university together with the trade unions in southern Sweden. Special university courses were introduced to meet needs and problems defined by the regional trade unions. For example, we set up university courses in work organisation, environmental areas and studies, application of the law on employment and technology and economic issues confronting trade union representatives on industrial boards.

The fact that the university courses have enabled university scientists and lecturers to study and define needs and problems encountered by the trade unions in daily working life has provided the university with the impetus for new studies and research. It has also improved the ways of evaluating the results of scientific research together with the trade unions.

We also introduced new ways of running university courses together with the trade unions in fields of importance to the creation of new alternative methods of industrial production and the designing of new technology for new jobs. Some of the ideas generated by these studies have become basic ideas for new start-up companies at the IDEON science park today.

IDEON AND THE TRADE UNIONS

At the beginning of 1981 the regional trade unions gave their backing to the idea of creating a special village for industrial research and development work in the vicinity of the university. It was natural to look to the university as a source of knowledge in the efforts to design new industrial products, industrial processes and new industrial activities. Advanced industrial research activities near to the university are also good for the university and strengthen the university's resources with good supervisors, advanced equipment and good contacts with industry and society.

The SUN-Foundation was founded in 1982. The initials stand for Cooperation University and Industry and the governor of the region is chairman of the board. It is a special foundation closely linked to the

university of Lund and Malmö and the regional trade unions are members of the board. This foundation launched the IDEON science park concept in 1983. Today about 100 R&D companies are operating in the IDEON PARK in Lund/Malmö and, all together, they have about 800 people engaged in industrial R&D work. Buildings have been erected to a value of around 100 million US dollars. It is run on totally commercial lines. There is no free money from the government. Near the technical institute in Lund is the IDEON research park and the IDEON industrial park is even to be found in the academic city of Lund. In the IDEON industrial park we allow small-scale production and advanced consulting activities.

Malmö (the third biggest city in Sweden) is the economic and industrial centre of southern Sweden and is very near to the Danish capital, Copenhagen. The IDEON science park is located on the campus of the university hospital and the odontology faculty of the university.

The trade unions have played an active part in the realisation of the IDEON science park concept and contribute actively to policy on the creation of new industrial products and new industry. The IDEON operates as an important link and meeting place enabling the trade unions to keep abreast of the various problems surrounding the process of creating new industry and new jobs. Representatives of the trade unions initiate new products to solve problems, for example, in environmental technology, and interact in a network between university and industry to support industrial renewal in various ways.

CREATION OF NEW INDUSTRY MEANS NEW JOBS

Economic and political decisions taken by government or industry affect employment and jobs. It is often claimed that the new technology ('High Tech') is the main reason behind the problem of unemployment. The OECD puts the number of unemployed at about 30 million at a time when many countries are introducing new technology in many branches. In Sweden the government traditionally puts the political goal of full employment into its proper perspective. This explains why the Swedish Employers Association and the Swedish trade unions exhibit a positive attitude towards new technology. Old industrial technology cannot guarantee future employment and prevents a small country from competing effectively on the international market. New technology determines the industry of tomorrow.

It is therefore important to the trade unions to remain in close contact with science and research centres in order to keep properly abreast of technological changes. The new technology will of course cause industry operating with old technology to lose markets. Industrial changes also affect urban planning and the whole social structure in the local community. By keeping themselves informed of the main technological developments of tomorrow the trade unions will also be better prepared to meet the environmental problems of tomorrow.

NEW INDUSTRY AND URBAN PLANNING

There is a tendency for new industries to be located in or near to industrial and business centres. International airports are very important for the high-tech industries. Industrial parks will therefore be set up close to airports and major cities, if possible at a short distance from or with good connections to universities and research centres.

New high-tech industries expend large amounts on environmental protection. The surrounding area is often regarded as a park. A large proportion of those companies' employees are highly educated technicians.

Where there is a good university, an international airport, a beautiful landscape and climate and a science park is established as a forum for the development of new technical products and industry, then an industrial park will soon follow, giving rise to the urban planning process which will lead to the development of a new city. Society as a whole is changing. The old structure where industry was divided up into branches is becoming increasingly redundant. This is of great relevance to the trade unions and the way in which they are traditionally organised. The make-up and behaviour of the industrial sector will change radically. In a sense, the high-tech era is generating a new industrial culture.

THE START-UP PHENOMENON

The structure of established industry could be described as follows. Large industrial groups control their respective markets. Their primary concern is to retain their hold over these markets and to expand into new markets. Big organisations experience great difficulty in assimilating new ideas and adapting to technological changes. They have already invested in a technology to produce the goods which the market demands. It is often easier

for them to buy new successful high-tech companies than to develop the new technology themselves in their own large organisation. Most of the members of the trade unions are employed in the big established industries.

New technology is very often developed by new small technology-based research and development companies. In science or research parks linked to universities this phenomenon takes place in start-up companies. These new companies differ from traditional companies in that they are flexible and organise themselves rather like football teams. Start-up companies stand for a new industrial culture.

However, we have never heard of a new trade union being set up because of the birth of a new technology. Of course the question is a provocative one. My suggestion is that the trade unions must play an active part in the development of new products and new industry. One of the best technology windows is a science research park close to a university.

A NEW INDUSTRIAL CHALLENGE TO EUROPE

Someone has said that the people of the United States are looking to the people of Japan and the people of Japan are looking to the people of the United States - Europe is out of the game. Let this statement be a challenge. Because something is happening in Europe. Many universities in Europe today are organising science or research parks in one way or another to meet this technology challenge. Various networks are developing to meet the need for communication and information between them. Many conferences and seminars are held at which the science or research parks are promoted as the germination ground for new technology ideas and industrial renewal. For example, in April 1987 the OECD organised a conference in Paris to examine the role of institutes of higher education in planning, financing, development and operation of science parks. At this conference there were discussions on the basis of experience in different countries analysing the factors which are crucial for the realisation of science parks. I believe that representatives of the trade unions should take part in conferences of this type. It is extremely important that the trade unions participate in the creation of new networks at the European level to back up cooperation between universities and industry to meet the challenges of the new technology. Science and research parks will be essential communication links in networks for industrial renewal.

NEW ROLES FOR THE TRADE UNIONS

The trade unions are of course interested in good contacts with universities or research centres primarily in order to acquire knowledge of value to their own operations, whereas from the universities' point of view, good contact with the reality of industrial production, experience and job skills is an essential condition for ensuring that science and research will obtain all the background information needed for developing new knowledge. Through their members, the trade unions likewise define very important knowledge in social life and about society. Industrial research and development and new high-tech industries represent the beginnings of a new culture in which the trade unions, being confronted with new technology and industry, will be called on to play new roles in operating the new technology in connection with its implications for society and social welfare.

THE 'INSTITUTS DU TRAVAIL' IN FRANCE:
A STRUCTURE FOR COOPERATION BETWEEN TRADE UNIONS
AND UNIVERSITIES AT NATIONAL AND REGIONAL LEVEL

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Summary

In contrast to the ASUR, the 'Institutes for Labour Studies' set up in France from 1955 onwards are an example of institutional cooperation between universities and trade unions. Financed by means of public appropriations, each institute belongs to a university but has its own specific constitution, being managed on a joint basis. However, the chief vocation of the institutes is the training of trade union officials rather than the conduct of research activities. Nonetheless, the latter has grown both as a natural component of training and higher education (research papers and doctorate theses) and as a result of the interchange between the two views of society (university versus trade unions) which takes place during advanced and specialised traineeships for trade union officials. Moreover, prolonged cooperation between university and trade union teams leads to the accumulation of a body of information and questions which gives rise to more systematic research programmes. Mr. Freyssinet concludes by setting out the conditions necessary for the further development of experiences.

The Institutes for Labour Studies' main 'raison d'être' is to bring about cooperation between universities and trade unions for the purpose of training trade union officials and not to carry out research work. However, the very fact that such training is being developed within the university has thrown up the problem of how it interacts with research. It is this process that we will attempt to describe.

1. OBJECTIVES

The Institutes for Labour Studies appeared in France in 1955. They were born out of action undertaken by certain academics and by officials responsible for training from the three big trade union confederations (CFDT, CGT, CGT-FO).

A. From the academics' point of view, the starting point was a critical investigation into the inadequacy of relations between the university and the working world. For France, these relations had developed historically around two factors.

Firstly, from the end of the 19th century onwards, academics chose to align themselves with the labour movement, notably by taking part in training activities, and more rarely in research work organised within the trade unions. Whatever the significance of these actions, they arose out of individual commitments and therefore outside the confines of the university.

Secondly, certain higher education establishments have, for a long time now, made courses available to workers either as evening courses or correspondence courses. In the last 25 years, legislation has developed in such a way as to widen considerably the possibilities for employees to have access to these courses, even on a full-time basis; however, this involves only satisfying the requests of individuals or firms; the trade union movement's involvement here is only an indirect one.

The programme of the Institute for Labour Studies differs, firstly because it relies on a standardised cooperation between universities and trade unions, and also because it aims to enable trade union officials, within the scope of the duties they have to carry out, to have access to university resources for education and research purposes.

B. From the trade unions' point of view, in addition to the importance they attach to being recognised as official partners of the universities, they have found an answer to their needs for advanced training.

In fact, after the second world war, the right to work and collective bargaining caused a variety of tripartite or joint organisations to spring up, in which trade union officials, whether appointed or elected, have to carry out consultative, jurisdictional, or managerial duties. Exercising these rights requires highly specialised knowledge.

A symbol of the movement to open the universities to more and more sectors of society, the Institutes for Labour Studies could only function, remembering the features we have pointed out, with managerial methods that differed from those of the traditional university.

2. STRUCTURES

There is at present a network of nine Institutes for Labour Studies in France. Two of them cover the entire country, whilst the other seven work on a regional basis. All of them follow the same regulations as regards organisation and operations.

A. Each Institute is attached to a university and follows the established university regulations, in particular those concerning recruitment procedures and professional duties of staff.

However, within the university, the Institutes for Labour Studies have a specific statute laid down by national legislation, which gives them wide scope for operating independently.

B. With regard to the way they are run, the Institutes are organised on a parity basis.

Their Council is made up half of academics, elected by their colleagues, and half of trade union members appointed by their relevant organisations.

Following the same principle, training activities are placed under the joint responsibility of a university course organiser and of a trade union organiser, whilst each research programme has a steering committee similarly organised on a parity basis or sometimes on a tripartite basis with the addition of outside experts.

C. Finance is provided mainly by the Ministry of Education and by the Ministry of Employment. Finance for research programmes is normally provided for in a specific contract.

3. RESEARCH ACTIVITIES

To give more substance to the description, we will draw upon two real examples, these being a national institute, the Institute for Industrial Social Sciences (ISST), attached to the University of Paris I, and the Regional Institute for Labour Studies (IRT), attached to the University of Nancy II.

Existing mainly for training purposes, the Institutes have been encouraged to expand their activities recently in various directions, like producing teaching devices, providing information services, and carrying out studies and research work, etc.

A. How Research Activities have Developed out of Training

1. An important pattern of this process from training to research corresponds to the natural logic of higher education. The ISST offers a Doctorate in 'Industrial Social Sciences' and is collaborating on devising a Diploma in Specialised Advanced Studies in 'Work Administration and Management'. The IRT, for its part, offers a Diploma and also an Advanced Diploma in Social Studies.

Within this framework research dissertations and theses are produced by the Institute teachers who, very naturally, combine this with the theoretical and empirical problems they encounter in their collaborative work with the trade unions.

Moreover, these courses are available, exceptionally, to workers who do not possess the requisite academic qualifications but who can prove they have acquired a satisfactory level of experience. Trade union members therefore enrol on these grounds and thus learn about research systems.

2. But it is worth pointing out another catalyst in the training/research process, which is perhaps of greater significance. The specialised advanced trade union training courses undertaken in the Institutes are not merely means whereby knowledge is passed on from one person; they are the moment of confrontation between two minds which view economic, judicial and social reality from different points of view: the expert and the person actually involved. As soon as the subject becomes important enough to justify holding several courses in succession, one sees a progressive transition from the training course to periods of research.

For example, a training course was organised on restructuring in the chemical industry, and this inspired trade union leaders and academics to make a thorough study of what range of economic and social indicators had to be assembled and analysed by a firm's trade union section, in order to be able to anticipate and put forward alternative proposals on decisions taken by the firm's management. A system was applied and tested in firms, technical assistance having been provided by an academic and a trade union official, who had led the sessions of research.

B. How Research Activity Develops from Information and Problems Resulting from the Cooperation Between the University and Trade Unions

Continuous cooperation between academics and trade union officials results in the accumulation of a stock of information and questions which give rise, depending on priorities and means of financing, to more systematic research programmes.

1. The ISST has set up a Documentation Centre covering all the problems connected with work. This centre chiefly provides the means for preparing training sessions, but it also enables pamphlets and lists of publications to be drawn up and published regularly on subjects of current interest, flexibility for example.

At the same time, several lines of research have sprung up one after another, founded on contractual, national or international public financing, as follows:

- (a) Ergonomic analysis, mainly relating to the study of fatigue among shift workers.
- (b) The problems involved in training adults, individuals and collective aspects, comparisons on an international level, analysis of the related provisions in French legislation.
- (c) Proceedings before conciliation boards: these are French judicial bodies, responsible for individual trade disputes, and consisting of elected magistrates, employers and employees, in equal number. The IRT has, for its part, expanded its activities in documentation and research that are directly linked to regional requirements, even if the subjects dealt with are obviously of national interest.

- (d) An information centre on the right to be trained, which receives financial support from the Lorraine area, is open to all parties interested in the adult vocational training scheme which operates to a large degree on a bipartite or tripartite basis.
- (e) A collection of cases decided by the courts on 'industrial relations within the firm' has been in existence for over ten years. As well as the services which it provides on a national scale, this collection ensures that an information service is provided for officials in the Ministry of Employment in the three regions of Eastern France; it also provides a starting point for research into the particular difficulties of employment in the Lorraine area.

2. Attention should be drawn to the circumstances surrounding the development of these activities. The trade union organisations present their views on what their needs and priorities are and the interest they have in the projects proposed; they are concerned with the follow-up to work carried out and with the evaluation of results obtained. But trade union organisations respect the freedom of researchers to choose the working assumptions and systems used, and of course to communicate the results. This agreement of principle between the two parties obviously does not shield them from every practical difficulty: no one can ignore or overlook the fact that results obtained from research are likely, at some given moment, to have a direct effect on the real social world.

In addition to this ethical aspect, we also wish to emphasise the procedural aspect. Whenever the opportunity arises, we consider the possibility of making workers not only the object of research but also of involving them in this research. For example, when research was being carried out into the fatigue experienced by automatic processing workers in the iron and steel industry, we tackled the problem from two sides: one of these was the 'traditional' and 'scientific' approach, which depended on a series of objective criteria, the results of which were processed by computer. The other approach relied on a group analysis method, where the workers themselves analysed their feelings of fatigue and the impact it had on their daily life, in and outside work.

It is only through cooperation between the university and trade unions that it is possible to experiment with these methods and enjoy the confidence of the workers who participate and who discuss and later make use of the results.

CONCLUSION: CONDITIONS IN WHICH THE EXPERIMENT DEVELOPED

After more than 20 years' experience, we have a better understanding of the necessary conditions leading to the success of a project, the history of which has been outlined by its founder, Professor Marcel David, and which is aptly titled ('Témoins de l'impossible')¹

Universities, as institutions, must realise how important it is for them to make themselves available to the working world through the organisations that have been set up to this end. They will therefore have to overcome a delicate problem: that of recognising within their ranks the individuality of the Institutes for Labour Studies, and thus their relative independence, while at the same time ensuring they are not treated as fringe organisations.

Academics from the Institutes for Labour Studies must know how to adapt their work, from the point of view of both content and procedures, to the nature of the question that is put to them, whilst remaining pure academics, i.e. teachers as well as researchers, not confusing adaptation with the lowering of standards.

There must be agreement and mutual trust between academics and trade unionists based on a set of ethics: the role of academics, whose intervention is professional and not militant, is to provide trade unionists with the means of increasing their level of knowledge and capacity for study. Their function stops at the point where discussion begins on the conclusions that the trade union movement may draw from this joint study.

Trade union organisations, of which there are, as everyone knows, many different types in France, must see the advantage of belonging to an academic institution. They must see the advantage, and they must accept the risk, of a form of training and research which respects the main principles of the university, which offers, in other words, an excellent capacity for analysis as well as a critical and contradictory view of social reality.

Finally, but not least, the State, which is financing the experiment, must keep to a strict definition of its area of responsibility. It may justifiably regulate the use of the public funds it provides, but it must give up all control over the nature of the activities and must not intervene in establishing priorities.

That is to say that the conditions for the pursuit and development of this experiment have to be renewed every day.

¹ Marcel David, *Témoins de l'impossible - Militants du Monde Ouvrier à l'Université*, les Editions Ouvrières, Paris, 1982, p.260.

TRADE UNIONS AND TECHNOLOGY RESEARCH IN BELGIUM
- THREE YEARS' EXPERIENCE WITH THE
STICHTING TECHNOLOGIE VLAANDEREN (STV)

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Summary

The STV (Stichting Technologie Vlaanderen) can be seen as the social component of the overall policy of the Third Industrial Revolution in Flanders (Belgium). Its originality compared with other forms of cooperation lies both in its structure and in the multiplicity of its tasks. The STV, which was set up by the authorities at the end of 1983, is financed by the state and forms part of the Flemish Socio-Economic Council; it now has 16 research workers and is jointly managed by the two sides of industry. During the three years in which it has been in operation its tasks have grown from documentation and surveys to supervision, consultation and coordination. Mr. Berckmans also provides a brief account of the awakening of the trade unions to the implications of technological innovation and analyses the nature of relations between the trade unions and scientific research.

INTRODUCTION

This contribution is made up as follows:

1. Description of the STV (Flanders Technology Foundation) (setting up, tasks, activities).
2. Specific relationships between trade unions and research on the subject of the new technologies.
3. Assessment of the STV by placing it in a specific Belgian context and in an international context.

1. GENERAL DESCRIPTION OF THE STV

1.1 Origins of the STV

In general terms, the setting up of the Flanders Technology Foundation (STV) forms part of the overall policy of the Flemish Executive on the third industrial revolution in Flanders (DIRV): at the beginning of the eighties the authorities, in consultation with various interest groups, planned a number of initiatives aimed at promoting the development and application of new technologies in business in Flanders. In addition to a large scale public awareness campaign (by means of, among other things, the Flanders Technology International Fair), the initiatives resulted in the setting up of enterprises like INVOMEK, IMEC, MIETEC, INVENTIVE SYSTEMS, etc., whose tasks were respectively: training engineers in VLSI design using CAD techniques; super laboratory for micro-electronics; production unit for VLSI chips; and a service to promote new technologies in small and medium-sized undertakings. In this context the STV is the social dimension of DIRV. However, the setting up of the STV forms part of a much more complex set of developments which are quite distinct from DIRV policy. The most important of these, to which I will shortly return in greater depth, is the growing awareness in the trade unions of both the problems associated with technological change and their relative inability to deal with them. It is chiefly this awareness which gave rise to the idea of setting up a new body to deal specifically with the social aspects of technological innovation.

Discussions were held between the Flemish Executive and the two sides of industry in the VESOC (Flemish Economic and Social Consultative Committee) to prepare the decree setting up the STV.

1.2 Tasks of the STV

Under the decree of December 1983 setting it up, the STV has six formal tasks:

1. building up a documentation centre on the social aspects of new technologies;
2. planning and carrying out social research;
3. publishing and distributing the results of such research;
4. coordinating research in this area in Flanders;

5. advising the Flemish authorities;
6. providing guidance for the two sides of industry.

For the purpose of carrying out these tasks, the STV was set up in July 1984 as part of the former GERV (Regional Economic Council for Flanders), now the SERV (Social and Economic Council of Flanders).

1.3 Structure of the STV

The fact that it is incorporated in the SERV means that the STV does not have its own legal personality, but forms part of that body's administrative structure.

It is, then, the social partners who jointly administer the STV:

- The supreme body for the STV is the Management Committee, made up of 20 representatives of the social partners, who are also members of the Council, the supreme body of the SERV. This Management Committee meets at the crucial times: approval of new programmes, assessment of the operational year.
- The detailed preparatory discussions take place in the restricted Management Committee where the six social partners (ABVV, ACLVB, ACV, BB, NCMV and VEV - the three unions, agriculture, SME and industry) are represented by a minimum of one and a maximum of two persons. This restricted Management Committee meets at least once a month.
- Where a decision has to be taken urgently or there is disagreement, the Executive of the SERV (four persons) is requested to find a solution.

The internal operational structure of the STV has changed over the years: in 1984 a start was made with four staff members (two sociologists and two economists). Since then the staff has expanded to 16 as follows:

- 1 Head of Department,
- 3 officials,
- 2 documentalists,
- 2 persons responsible for providing assistance with techniques and methods,
- 1 person responsible for technological policy and counselling,

7 employees specialising in either a specific technology (computers in administrative services, FMS-CIM), or a specific subject area (numbers in employment; quality of work; consultation at company level; qualifications).

These people are sociologists, economists and engineers.

1.4 STV Activities

This internal structure is the result of almost three years' operation. The various tasks of the STV have begun in stages over the years:

1984: Beginning of documentation centre.

General research philosophy worked out on the basis of the following principles:

- the results of research must be cumulative and/or complementary;
- the projects must, on the one hand, produce practical results for the social partners and, on the other, provide an insight into more fundamental aspects (such as research methods and techniques);
- in principle the aim is as much inter-disciplinary research as possible;
- the projects must in the first instance focus on the situation in Flanders, but naturally trends, developments or research outside the region have to be followed up;
- the general sphere of operations of the STV was also described in broad terms:
- it concerns the three new basic technologies (micro-electronics, new materials and biotechnology) and all derived applications;
 - . although work, economic development and training are priority research areas, research in other areas (such as politics, culture, lifestyles, legislation and their respective links with new technology) must be possible in the future.
 - . STV research is not restricted to 'effects', but seeks to investigate, in cooperation with academics, the origins and development of technological innovation and the decision-making processes that go with it.

Start-up of a limited research programme (three studies, internal):

- inventory of socio-academic research in Flanders into NT (more than 100 projects were listed in this connection according to various criteria);
- CAD/CAE in Flemish industry (the results of the survey in more than 100 firms presented in a seminar);
- computer-assisted company training (an exploratory study in three firms).

1985: Professional expansion of documentation centre

Large-scale research programme begins:

- 7 projects (total of 19 researchers)
- in 5 projects there was cooperation with 12 external research centres
- objective a coherent programme, in which connection STV should acquire a sound basis of knowledge in a number of areas:
 - . quality of work,
 - . robots in Flanders,
 - . technology-consultation in the undertaking (see Collective Agreement 39),
 - . biotechnology,
 - . new technologies and small and medium-sized undertakings,
 - . statistical problems in measuring the links between school and the labour market.

1986: beginning of a series of short-term information actions:

- safety and health at the work place,
- technology management and guidance,
- qualifications,
- medical technology,
- information technology centres in the United Kingdom,
- electronic payment systems.
- expansion of the role of disseminating information through publications, seminars, lectures.

These short-term projects (± 6 months) result in a well-documented information dossier or in brochure aimed at a wider public.

1987:

- computerisation of the documentation centre (which now has more than 2 000 books, 60 periodicals and a collection of press cuttings);
- large-scale publicity campaign (concerning projects from 1984, 85 and 86) through research reports, information dossiers, brochures and technical memos;
- start of a multi-annual programme extending until 1990;
- beginning of guidance and counselling service. A number of specific guidance projects will be worked out and the STV has been included on a number of committees of the Flemish Council for Academic Policy.

This step-by-step development of the role of the STV is following a logical course: first collate documentation and establish a basis for expertise through research and only then approach the outside world through guidance, counselling and closer coordination.

2. TRADE UNIONS AND TECHNOLOGY RESEARCH

Without doubt, technological innovation is one of the most significant developments which have altered the face of the work process in the industrialised world in the last ten years. In retrospect, it is obvious that the trade unions were not prepared for a change of this type: both awareness of the problems and attempts to establish structural links with researchers to prepare new solutions have developed in a gradual and sometimes very pragmatic way.

Before going into the relationship between unions and research, a brief account of the links between unions and technology is required.

Insofar as this is possible with such a recent development, two major phases may be distinguished in Belgium with regard to the unions' coming to terms with technological innovation.

2.1 1975-1981

A feature of this period was a growing awareness of the impact of new technologies as a result of actual experience in specific sectors or firms where computerisation and computer controlled automation were introduced. This period saw the introduction of electronically controlled looms, the large-scale computerisation of the financial sector (with the introduction of electronic calculation and payment systems), the first electronic POS terminals in retail outlets; various forms of automation of metal-processing using CNC machines; computerisation of administrative tasks; technological progress in the printing sector.

In some cases these reports were discussed in detail in seminars or congresses (e.g. LEC¹ congress 1981), but at that time one could not speak of a really coherent trade union policy with regard to new technologies.

Because of geographic, sectoral and even time factors concerning experiences on the shop floor, it was several years before the trade unions were able to achieve an overall view and hence adopt a more general policy with regard to the new technologies.

This first period was characterised by isolated studies on technology and specific industries carried out by a number of trade union associations in cooperation with a few research centres. This is because even among academics, or more precisely occupational sociologists, the same gradual awareness was apparent: before 1975 most research in this area was directed towards analysis of labour market processes. From 1975-76 the 'new technology' factor gained increasing prominence as an explanatory variable in the sociological approach to research on employment matters.¹

This twin 'awakening' resulted at the end of 1981/beginning of 1982 in a number of research reports in which, for the first time, at the instigation of the trade unions, technological innovation and its consequences for employment are the central issue.²

2.2 1981-1984

A number of developments in this period gave rise to some specific structural initiatives:

¹ Landelijke Bedienden Centrale

In 1982 the national government (through the scientific policy planning services) developed a far-reaching plan to investigate the social consequences of new technologies. Although this plan was not put into effect as such, certain aspects of it may well be incorporated in the EEC's Fast-I-programme which has meanwhile started.

In June 1982 the National Council for Academic Policy published an initial opinion³ on academic research into micro-electronics and its economic and social consequences for Belgium. This opinion is particularly noteworthy because it states that 10% of all financial assistance for technological micro-electronics research must be spent on parallel but integrated social research.

This opinion, too, has not been put into practice but the fact that it was produced by a body consisting of employers' and workers' representatives and academics does give it a great deal of weight.

The Flemish Executive has meanwhile made a start on its DIRV policy in which connection, certainly in the framework of the above developments, the trade unions have called for a social dimension to be added to the all too technically orientated policy.

The trade unions have since made the problem of technological innovation a permanent aspect of their policy. The objective is analysis going beyond individual cases, among other things through new research⁴ and national congresses.⁵

In the same period the employers' organisations also adopted a public standpoint on technological innovation.⁶

In December 1983 the developments described above found expression in two government decisions in which the trade unions played a crucial role:

- . first, at national level, the conclusion of Collective Agreement 39, in which rights and obligations are laid down regarding information and consultation on the social consequences of the introduction of new technologies;
- . second, at the Flanders regional level, the adoption of the decree setting up the Flanders Technology Foundation, which has been operational since July 1984.

I felt that this brief account was important in terms of giving a clearer picture of the relationship between trade unions and technology research.

3. TRADE UNIONS AND ACADEMIC RESEARCH: A LOVE-HATE RELATIONSHIP?

The complex relationship between trade union activities and academic research naturally goes back further than on the recent topic of technological innovation. Nevertheless, I feel that the relationship between unions and research into aspects of technology provides a good example of the type of problems and difficulties that arise in general.

In this connection three significant contrasts are central to the issue:

1. On the one hand there is the relative detachment of academic research from specific trade union problems while on the other the initial impetus for academic research came precisely from the trade unions. For example, in the field of research into micro-electronics, more than BFR 5 600 million was invested in Belgium in 1979. It would be no exaggeration to state that only a very small fraction of these funds has led directly to solutions to the problems which the unions have to face every day. Moreover, the amount mentioned here is in turn only part of total R&D expenditure in Belgium. It is a historical fact that the questions with which academics have occupied themselves have only rarely been of direct use to the trade unions. It is therefore all the more remarkable that in setting in motion academic research into the social aspects of technological innovation, it was these very unions who emerged as the first financiers and the first interested parties. Perhaps the simultaneous awareness of some trade union circles and some academics, as described above, has something to do with this.
2. A second contrast lies in the fact that on the one hand there is a large measure of mistrust in trade unions regarding academics but on the other very high expectations are placed on those same academics whenever they are 'taken on board'.

This brief account cannot go into the reasons for this mistrust, but it does result in very specific decisions such as the refusal to include academics in the management bodies of the STV, even in an advisory role, or the application of a whole range of control mechanisms where a research project is put out to third parties. Once this mistrust, which without doubt is also due in part to the academic circles themselves, is overcome, then suddenly very high expectations come into play: academics must not only make up for the lack of knowledge, analysis and expertise in the trade unions, they must also provide solutions at macro and micro level and at the same time an element of analysis and training. The fact that these expectations cannot be realised immediately is often frustrating both for the researchers and for the trade union commissioning the research.

This brings us to the third 'dilemma'.

3. Trade union action is largely directed towards problems of immediate concern. This requires an enormous amount of effort to work out short-term strategies. Academics, on the other hand, think more in the long-term. The research process itself is often the cause for this: formulation of the problem, analysis of the literature, empirical stage, processing of the data, reporting. However, if as a trade union you are confronted with an acute problem today, you cannot wait until next year for expert, academically sound advice. On the other hand, as an academic you can make such an urgent contribution only if you have been able to develop expertise over a long period.

The above conflicts cannot be removed in the short-term and in my view there will always be areas of discord. Within these areas, separate but coordinated attempts can be made to achieve a balance between on the one hand academic circles and on the other trade union activity. The structure of the STV itself certainly offers a number of possibilities in this respect.

4. COMPARISON BETWEEN STV AND NATIONAL AND INTERNATIONAL TECHNOLOGY ASSESSMENT INITIATIVES

- A. With the structure and activity described above, the STV has a special place in the international forum of technology assessment initiatives.

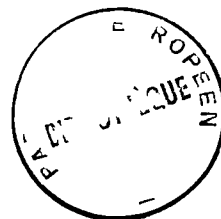
1. Its position vis-à-vis the government is somewhat unique: the STV was set up by the government, forms part of a government department and is financed exclusively by the government (by means of an annual appropriation of BFR 50 million). However, that same government does not take part in the day-to-day policy or administration of the STV, so that it is able to operate relatively independently of the government. In other words, the STV is not a body which by definition has to propagate the government's technology policy. In comparison with neighbouring countries, this situation is rather unique and is a guarantee for the autonomy with which research proposals can be drawn up. From the list of research projects already given it is clear that the topics are indeed connected with problems confronting the trade unions.

2. It is still difficult to get these results across to a wider public. Although the STV has succeeded in involving the social partners closely in actually carrying out their projects through countless joint steering committees, it will always be difficult to carry out work which is both academically sound and accessible to the public. The joint structure of the administrative bodies is also exceptional from an international point of view. Usually a body carries out work on behalf of one of the social partners, or the social partners form part of a broader forum in which other interest groups are also involved.

This joint structure of the STV, which on the one hand can lend a great deal of weight to research results or activities, remains on the other a lasting source of potential conflicts in that employers' and workers' interests on the shop floor are not served to the same extent by technological innovation.

There is no denying that the joint structure played an important part in preparing the STV research programmes.

I am also convinced that, hitherto, in most cases the research approach has gained in value as a result. This implies a structure in which researchers do not have to think and act within the limits of lines of argument laid down in advance by the social partners.



3. Finally, the combination of tasks is also noteworthy: in comparison with foreign initiatives which have to concentrate on either research, or guidance, or counselling, the STV has to combine these different tasks. This offers, at least theoretically, an enormous range of possibilities, particularly as the STV forms part of the Flanders Social and Economic Council which has also been given by decree an important advisory role vis-à-vis the regional government. The combination of these different features offers many potential opportunities to organise both specific practical activities at micro level and policy initiatives at macro level.

B. In the Belgian context as well, STV represents an important step forward in the cooperation between unions and academic circles. The first part of this paper showed how underdeveloped is the relationship between unions and research centres. In Flanders each of the two large unions have indeed developed a special relationship (both financial and structural) with one research centre: the ACV uses the HIVA (part of the Catholic University of Louvain) and in the ABVV, development of the RIAT is in full swing. Experience shows however that these research centres often have to limit their research activities to the trade unions' own members. This takes nothing away from the seriousness of the research carried out, but it does create a number of problems both from the point of view of accessibility of information and generalisation of the results. It is precisely through the cooperation between the unions within the structure of the STV that opportunities are created to solve these problems.

CONCLUSION

Overall, the STV has, in my opinion, been able to develop its documentation, information and research role on a sound basis in a fairly short time, even though the correct structure and routine must still be found to pass on all the results collected to the broad base of the social partners.

In this sense it is significant and reassuring that in 1987 the social partners intend to start up the guidance role of the STV.

NOTES

1. c.f. for example:
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3. NRWB: Onderzoek in micro-elektronica en zijn maatschappelijke gevolgen. Eerste verslag en eerste aanbevelingen van de NRWB. Brussels, 1983, XXIII + 148 p.
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5. e.g.:
ACV-Congress on New Technologies, Liège, 12 March 1983.
ABVV-Proposal on control over new technologies, presented in the NAR on 10 March 1983.
6. e.g.: Belgian Companies conference, June 1983.

UNIVERSITY/TRADE UNION COOPERATION IN SWEDEN
- TEN YEARS' EXPERIENCE AT LINKÖPING UNIVERSITY

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Linköping University, Sweden

Summary

The very young Swedish University of Linköping (1975) is perhaps the best example of a research centre with close links to society. The fact that this university is so new means that it has been more able than other universities not only to adopt interdisciplinary approaches but also to take account of the points of view of workers. Consideration of workers' views was given institutionalised expression in the 1977 legislation providing for representation of the trade unions on the various bodies of the universities. Professor Areskog analyses the positive and negative effects.

Trade union representation has also given rise to specific cooperation projects which, despite the initial difficulties experienced on both sides, have yielded positive results both for the university and for industry as well as for the surrounding community.

Linköping University is the youngest and smallest university in Sweden situated 200 km south of Stockholm. The engineering and medical faculties started officially in 1970. The embryonic Faculty of Philosophy and Art started in 1967 as a branch of Stockholm University. However, full university status was attained in 1975 and the Faculty of Arts and Sciences obtained its first research resources in 1980.

Figure 1 shows the present organisation of Linköping University and Institute of Technology, which is the name of the engineering faculty of the university. The major events in the development of the university are shown in Figure 2. The development of the university has been very dynamic and has made it possible to experiment with some very interesting university profiles (Figure 3) based on unconventional and frequently interfaculty approaches - many of them of interest and importance to society - such as

the interdisciplinary research topics 'Technology and social change' and 'Health in Society' with a centre for health technology assessment.

Engineering Research and Graduate Study
Faculty of Health Sciences
- Health Care Training
- Medical Research
Theme Research and Graduate Study
Arts and Science Education
Teacher Training

Fig. 1. Linköping University and Institute of Technology

1960 Teacher Training College
1963 Engineering (Master's degree)
1967 Branch Campus Status
1969 Faculty of Engineering
Faculty of Medicine
1970 Linköping University (three faculties)
Faculty of Arts and Sciences
1975 Linköping University and Institute of Technology
Computer Engineering
1977 Teacher Training College is assimilated
Electrical Engineering
1980 Theme Research
1982 Computer and Information Science
1986 Faculty of Health Sciences

Fig. 2. Milestones

Computer and Information Science
Theme Research
Faculty of Health Sciences
Adult Education Methodology
Industrial Economics and Management
Biomedical Engineering
Learning by Doing
Global Classroom
Didactics

Fig. 3. University Profiles

We have more than 8 000 students, around 3 000 of them studying engineering. The university staff and administration consists of 1 660 people with 100 lecturers and a payroll of SKR 317 million, which is 63% of the total budget.

Figure 4 shows the cost allocation.

Total Assets	SKR 501 million
- Undergraduate Programme	SKR 202 million
- Research; Graduate Studies	SKR 183 million
- Other	SKR 116 million

Fig. 4. Cost Allocation

Against this background I should like to make a number of comments concerning the role of the trade unions in the development of Swedish society during the 20th century. There are three principal trade union organisations in Sweden:

LO	The Swedish Trade Union Confederation
TCO	The Central Organisation of Salaried Employees in Sweden, and
SACO/SR	The Swedish Confederation of Professional Associations, mostly academic.

The LO in particular has very close connections with the Swedish labour party (Swedish Social Democratic Party). At least at various times the TCO also has had good relations with the same party. During the very long period of Social Democratic governments from 1933 to 1976 and from 1982 onwards, the LO has made a very active contribution to the development and renewal of Swedish society, especially in the period immediately after the second world war. Its commitments in various fields have laid the foundations for the many agreements that have characterised social development in Sweden this century. This is true also for education and research.

As a result of the student unrest of 1968, a new law was passed in 1977, whereby the trade unions' influence over the universities was considerably increased. The new law increased the influence of the employee organisations on the various boards and committees of universities and a new and more bureaucratic organisation than earlier was instituted.

One of the political aims of this new organisation was to break the old dominance of the lecturers at the universities. Some years earlier the students had already obtained representation on various boards. The following table shows how trade unions are represented at various university decision-making levels (Figure 5).

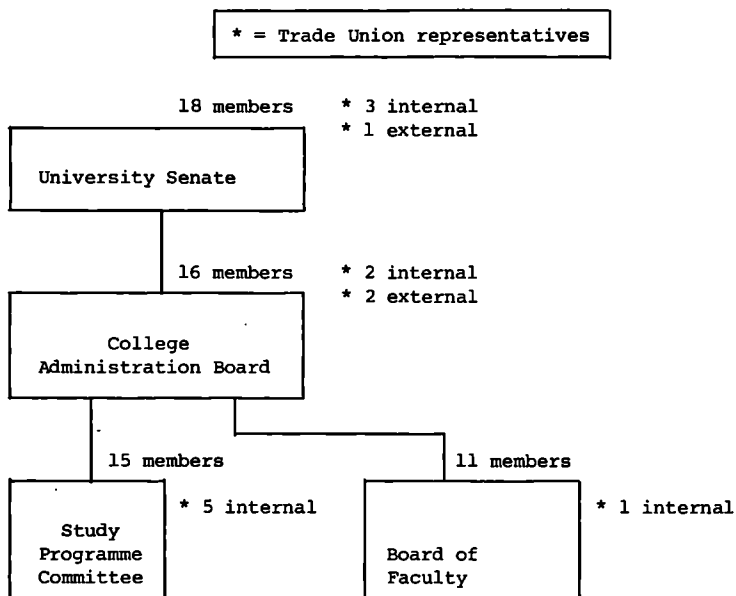


Fig. 5.

The organisation is valid in principle for all universities in Sweden. However, in spring 1987, the government proposed a new law entailing a relative increase in the power of the trade unions on the university governing board at the expense of the lecturers and students. Since the Social Democrats do not have an absolute majority and some parties were against it, Parliament has postponed its decision on this new law until the autumn. I have had personal experience as Dean both in periods before these

university reforms and in one period after and then during the last three years as Vice-President, and I will try to give my own simple analysis of how the influence of the trade unions has developed over the last ten years. The trade unions act at various levels of decision-making and with different levels of representation - both external and internal, i.e. employees of the university.

- A. External representatives on the senate and college administration boards.
- B. The local trade unions appoint a number of internal representatives at both senate and college administration board level. On the study programme committee and faculty boards there are only internal representatives.
- C. The local trade unions take part in regular negotiations - as part of the co-determination act - in matters concerning the staff of the university, organisational changes, salaries, etc. before every decision.
- D. The local trade unions have a direct decision-making power in matters concerning the occupational environment and health care.

How has this type of cooperation between the university and the trade union organisations worked in reality?

It should perhaps first be mentioned that the first President of the university was a professor of political science who took a positive interest in giving the trade union representatives a good start when the new law was passed with the result that special courses for them were introduced. Thus the experience at our university was perhaps more positive than at some other Swedish universities.

The following positive effects are to be seen:

- Greater interest of the trade unions in research and education. This was also emphasised in the government's research proposal to Parliament this spring.

- Greater awareness on the part of the university as to the need for society-related research. There could be both good and bad sides to this. The independence and freedom of research must not be jeopardised.

The following negative effects can be identified:

- Trade unions' representatives are frequently unfamiliar with the academic and scientific world, which may lead to a certain alienation, uncertainty and defensive attitude in the decision-making process.
- Another negative aspect may be that the allegiance of the trade union representatives to a certain political party is greater than their concern for the future of the local university, this giving rise to ideological dilemma.
- With respect to the local trade union representatives I have often felt that especially the representatives of the academics tend to represent their own faculty more effectively than the organisation as a whole and have difficulty in seeing what is best for the whole university.
- Another negative factor might be that the trade union representatives are more concerned about trade union issues per se than they are about education and research issues in general but in this respect there has been a clear improvement in recent years.

It is difficult to generalise about the quality and interest of the trade union representatives as the way in which the decision-making procedure progresses will depend largely on the individual.

However, the increased awareness of the members of the trade unions regarding possible contributions which the universities can make to solving problems in the industrial and commercial sector has given rise to research and development projects between the university, local communities and industries. I will briefly mention two examples.

Ten years ago the local district of the trade union confederation showed a growing interest in activities of the universities. Around 1975 the town of Motåla, some 40 km west of Linköping, suffered greatly as a result of structural changes in Swedish industry. This was by no means a local problem since Swedish industry in general was at that time undergoing a process of change from 'traditional' sectors such as mining, forestry, shipbuilding, etc., to what we now call 'hi-tech' industries. However, the

problems were for various reasons more pronounced in Motala than in most other places. A joint effort between the regional trade unions, Linköping university and the town of Motala was initiated.

From the beginning it was obvious that the local trade unions largely expected the university researchers to act as a kind of short-term 'trouble shooters' who would be able to provide precise advice and prescribe what medicine would solve the problems of the area. Very soon, but not without considerable difficulty in explaining this to the local parties, it became clear that university research was not well suited to this kind of short-term problem-solving. Instead, over a five year period, a much more comprehensive effort was undertaken, which resulted in a study of how small and medium-sized companies are influenced by factors in the surrounding industrial world. In order to bridge the gap between everyday life on the shop floor and the aspirations and traditions of university scientists, seminars in a popular form were arranged where the local and regional trade union organisations could discuss the results of the project. At the same time, more pure research seminars were arranged. Printed material for study circles and for the population of Motala was also produced.

As regards problems, the local trade union had difficulty in understanding what the role of the scientist implies. There were also evident problems in applying the knowledge produced by the university regarding the development of companies. At all events, the net result was positive in that the trade unions learnt a lot about the role of the university in society and also about the long-term goals and conditions for research. This resulted in active representation on various research bodies of the university.

Another positive example was that the scientists were obliged to report their results in a popular form so that representatives who had not received an academic education could understand and utilise the results. In fact, the provision of more popular-style research information has been recognised as one of the most important new tasks of the Swedish universities over the last five years.

Regarding another project in a much smaller industrial community, results are as yet available only from one sub-project where, after a fire had completely destroyed the building of a factory making doors, both the trade union and the managers of a firm together consulted the university regarding future production and the number of employees. This is a part of a bigger project called Project Östergötland after the name of the county

where the university is situated. The employees obviously wanted production to continue on the same lines as before, even if it was difficult to make any profit. One of the most important ideas in this project is to encourage companies to deploy any capacity and knowledge already at their disposal and use their own premises as part of a training system. The efforts made by the university in this case were much more time-consuming and of longer duration than the services offered by an ordinary professional external consultant. On the other hand the reorganisation of the company has formed part of a scientific project involving university resources, decreasing the cost per hour for the company. The project is also time-consuming since it has demanded many meetings and discussions with employees, managers and scientists in order to arrive at some sort of consensus.

However, this type of network between university and companies and trade union representatives does probably have a future since by working together the different groups can produce results greater than the sum of their individual efforts.

In conclusion, ten years' experience of cooperation between the trade unions and Linköping University has had positive effects, both on the university and on industry and society in the area of the university, despite initial teething troubles attributable to mutual unfamiliarity between the university and the trade unions. After ten years' experience, the Social Democratic government has proposed some changes in the role of external representatives on the university bodies, but due to differences of opinions among the various political parties and universities, decisions on this subject have been postponed to the autumn.

COOPERATIVE EFFORTS - AN ASSESSMENT

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Summary

To what extent has cooperation between research centres and trade unions influenced (or could it influence) the development of science and technology? Dr. Leydesdorff tries to answer this question after studying three types of cooperation:

- the German 'humanisation of work' programme,
- the 'projects drawn up by the workers' in the United Kingdom and the Netherlands, and
- The design of user-oriented systems such as the Swedish 'Utopia' project.

While, in the first case, collaboration has resulted mainly in the ad hoc adaptation of existing technologies rather than the design of new technologies, only a very small proportion of the projects drawn up by the workers (two cases out of 30) has led to an interface with R&D. Cooperation projects of the type relating to the design of user-oriented systems, which should, by definition, influence technological development more fundamentally, have had to be adapted whilst in progress, it having proved impossible to achieve the latter objective.

After making a distinction between research into the social effects of technological developments and technological research oriented towards social objectives, Dr. Leydesdorff sets out guidelines intended to ensure that cooperation has a real impact on research in both cases. He nonetheless considers it preferable - at least in the short-term - that the trade unions should confine

* Most of the research reported here has been carried out in cooperation with my colleague Peter Van den Besselaar.

themselves to the social effects of technological developments. To want to influence technological developments at the present time would be wishful thinking.

In addition to its significance for social relations and industrial democracy, cooperation between trade unions and academic research centres can have a lasting impact on the production of knowledge only if it can be matched with theoretical interest in the development of the sciences. Since questions about industrial relations have been on the research agenda for the social sciences in any case, one would expect cooperative efforts with the unions to open up new fields for research, to provide institutional support for new methods ('action research'), and to be fruitful for theoretical developments. Such effects on the sciences, knowledge production and control systems seem more problematic in the case of the hard sciences and technologies, and therefore, various attempts to make institutional arrangements to encourage cooperation should be evaluated more precisely on their relative success or failure (Ref.1). Have cooperative efforts only meant improving access to scientific expertise - however important this may be - or have they also led to more fundamental exchange processes between the two parties involved, and eventually to new research programmes?

The question whether the unions as a major social force are able to exert an influence on the development of science and technology is not only of political but also of great scientific interest (Ref.2). In the sociology of science and technology too, the social direction of the public sciences through cooperation between scientists and non-scientific groups is also on the research agenda (Ref.3).

From the Amsterdam Science Shop, which is an instrument par excellence for organising access, we know that the questions which are being posed are (i) nearly always technical and not scientific, (ii) occasional and not general, and (iii) require service and not research (Ref.4). Scientific or technological problems 'behind the question' are never obvious. In a series of extensive case studies we explored why this was so and we have concluded that in science-based industries the institutional arrangements and the division of labour in management create organisational dynamics for access to and control of information, inhibiting the trade union's ability to become a responsible partner in the formulation of S&T policies. In the

Netherlands we have found a similar situation in various branches such as banking and the chemical industry, and with respect to various technologies such as electronic data-processing and product innovation in catalysis (Ref.5).

Since we had comparable accounts from Sweden (Ref.6), we decided to look more systematically at the effectiveness of other major programmes of union-oriented research in western Europe from this angle: to what scientific results did they lead, and if so, why? (Ref.7).

HUMANISATION OF LABOUR

In FR Germany in 1974 the Social Democratic-Liberal government launched an extensive research programme on the 'humanisation of labour' (Ref.8). In addition to the primary objective of solving problems affecting the quality of labour, the development of human-oriented technologies was also one of the stated objectives of this programme. From the listings of the projects in the programme we were able to select 65 research projects (40 institutes) which (i) clearly involved technological issues, and (ii) were carried out in fundamental research institutes (including universities). We received a 53% response to our postal questionnaire about the scientific results of these projects. (Table 1).

TABLE 1 Results of the Questionnaire

Application of existing knowledge only	14%
Part of long-term research programme	65%
New scientific and technological research subjects	40%
Ideas about alternative technologies	45%
Limiting factors for further development:	
- availability of alternative technologies	35%
- organisation of work	45%
- financial resources	65%
<hr/>	
N =	39
Response	20
	53%

A few respondents (14%) were of the opinion that their projects were only applications of already existing knowledge. All the others thought that their work had resulted in 'new scientific or technological research subjects' and 'new interdisciplinary research subjects'. Although we

explicitly requested it, no respondent was able to point to any international publication on these 'new subjects'. All that was available was 'grey' (i.e. local) literature.

Of course, it can be argued that the further development of such subjects did not fit into the HdA-programme. Yet, if these topics were really as promising as the respondents suggested, why were they not developed further in other contexts? 'Lack of money' was the answer of the largest group (37%); followed by (25%) 'lack of alternative technologies' (!); 20% answered that the main problems were with the 'organisation of labour', which is clearly not a technological issue in the strict sense as we defined it above. In fact, the respondents had limited themselves to the adaptation of existing technologies to workers' demands instead of developing new technologies.

However, 50% of the respondents replied that they had hit upon ideas about alternative directions for the development of technology during their projects. Some of these ideas were provided as examples. They were, however, either more on the organisational side or poorly phrased and unclear.

Our conclusion is alarmingly negative: notwithstanding the enormous efforts made in this field in Germany, the high motivation of the researchers involved, and the high standards which are common in German scientific research institutes, no clear research questions or research programmes have been put forward at a level of generality sufficient to make them acceptable to the scientific community. Probably the only exception is 'user-oriented systems design', which seems to be a specialty that emerged from all these efforts (Ref.9). We will return to this issue later.

WORKERS' PLANS

The concept of a workers' plan has been derived from the example of the Lucas Aerospace Alternative Corporate Plan. In 1976 a combined shop steward committee at Lucas Aerospace presented an elaborate plan as an alternative to drastic job reductions envisaged by management. Because the company is highly knowledge-intensive (devices for military aircraft), the plan implied alternative diversification strategies and alternative technologies. An impressive list of proposals was presented (Ref.10).

Although the plan was never realised, it has inspired many trade union members to make their own proposals about what to do with technologies and to confront these options with the proposals put forth by management. The

TABLE 2 Survey of 'Alternative Workers' Plans' (in Dutch industries (1))

Plant	Mother company	Reorga- nisation	Closing- down	Alternative plan	product	External experts	Result employ- ment	Result technol. developm.
Philips Glas, Eindhoven	Philips	+	-	+	-	+	-	-
Elcoma, Stadskanaal	Philips	+	-	+	-	-	-	-
Philips Glas, Winschoten	Philips	No information available		.	.	.	.	.
Philips, Heer	Philips	No information available		.	.	.	.	.
Datasystems, Den Haag	Philips	+	-	+	-	+	-	-
Datasystems, Apeldoorn	Philips	+	-	+	+	+	-	-
Elcoma, Nijmegen	Philips	+	-	+	+	-	-	-
Beeldbuizen, Eindhoven	Philips	+	-	+	-	+	-	-
Philips Drachten	Philips	+	-	+	-	-	-	-
Philips Uden	Philips	+	-	-	-	+	-	-
Medical Systems, Best	Philips	+	-	+	-	-	-	-
Johan de Witt, Dordrecht	Philips	+	-	+	-	+	-	-
De Schelde, Vlissingen	VMP	+	-	-	+	-	-	-
RSV Stork, Hengelo	VMP	+	-	+	-	+	-	-
RSV Stork, Vlissingen	VMP	+	-	-	+	+	-	-
Stork Ketelbouw en appa- ratenbouw, Nijmegen	VMP	No information available		.	.	.	.	.
Stork Bepak, Grouw	VMP	+	-	+	+	+	+	-
Werkspoor, Sneek	VMP	+	-	+	-	-	-	-
Stork, Velsen	VMP	-	+	+	-	-	-	-
IH, Amsterdam	VMP	-	+	+	-	-	-	-
Conrad Stork, Haarlem	VMP	+	-	+	-	-	-	-
Bronswerk, Utrecht	VMP	+	-	+	+	-	-	-
Smit Ovens, Nijmegen	HOLEC	+	-	+	+	+	+ (3)	+
Smit Transform., Nijmegen	HOLEC	+	-	-	+	-	+ (4)	-
Controls Europa, Nijmegen	Controls	+	-	+	+	+	-	-

Honig, Nijmegen	Honig	-	-	+	-	-	improvement of quality of labour	-
Hyster, Nijmegen	Hyster	+	-	+	+	-	?	?
Kortman & Schulte, Nijm. AKZO Chemie, Amsterdam ENKA, Breda	AKZO	No information available						
	AKZO	+	-	+	-	+	-	-
	AKZO	-	+					
Nedstaal, Alblasserdam	Thyssen	+	-	+	-	+	+ (3)	-
Standard El., Den Haag	ITT	No information available						
Verschure, Amsterdam	IHC	No information available						
Gist Brocades, Haarlem	Gist Brocades	-	+					
ZBB, Koog a/d Zaan	Independent (2)	+	-	+	+	+	+ (3)	+
Union, Groningen	Independent	No information available						
FNV, Heerlen	Independent	No information available						

Notes

- 1 Cf. H.v.d. Maas, 1982. Inventarisatie Arbeidsrapplannen (Amsterdam: University of Amsterdam, Wetenschaps-dynamica).
- 2 In the period of the drafting of the alternative plan ZBB was still a part of the KSH-corporation, which has been dissolved.
- 3 The result is relative: fewer jobs have been lost than would have been the case without the alternative plan.
- 4 At Smit Transformatoren a relative result with respect to employment has been reached, but this has not been a consequence of the workers' plan.

leading idea has been that in our type of society, basic needs do not serve as a source of demands for the development of new technologies. Therefore, the model plan of Lucas Aerospace implied labour's cooperation with an institute of higher education (North East London Polytechnic): the combined efforts of workers and intellectuals would produce new technologies, which - because they would not be invented with capitalist aims - could at one and the same time be socially useful, less polluting and create new jobs (Ref.11).

The workers' plans have become a movement within the unions. Both in Britain and in the Netherlands many such plans have been put forward. We were able to locate 37 such plans in Dutch industry. In 29 cases we had access to the relevant written material, although it was not always complete. Where we still had some questions after studying this material, we could always easily find people who were well informed and we were able to find out about the details of the plan in an interview.

The results of our analysis are set out in Table 2. In virtually all the cases (one exception) the plans were a reaction to the threat of closure or of a far-reaching reorganisation of the plant. (The one exception was a plant in which severe problems with the quality of labour were involved.) The general conclusion is therefore that workers' plans - at least in the Netherlands - are a defensive weapon of workers and that their main aim is the safeguarding of employment. It should be noted that workers' plans were elaborated mainly at local plants of large corporations. The decisions responsible for the threatened employment were made at other levels of the company, and were thus beyond the control of the local unions.

However, nearly half of the proposals contained ideas for new products. As with Lucas Aerospace, it was clear that there are many innovative ideas alive among the workers. To develop such ideas into R&D projects is, however, another matter.

Although some cases constitute remarkable results of cooperation between scientists and trade unionists (Ref.12), the general picture is completely different. In nearly all cases analysed, it was the lack of technological development, the unwillingness of the plant to operate according to a purposeful plan of management, which resulted in a workers' plan. The thesis that a workers' plan gives workers an offensive instrument to influence management strategies on new technologies is, therefore, not

supported by our results: only in two out of about 30 cases was there any interface with R&D. Usually even any idea of how to develop such an interface was lacking.

USER-ORIENTED SYSTEMS DESIGN

The Swedish Utopia-project serves as a model for 'user-oriented systems design' as a specific cooperative effort between unions and as an emerging specialty in the research system (Ref.13). We have evaluated this project extensively elsewhere as a case in which unions may change the market conditions either directly or through pressure on the government (Ref.14). Here, we want to raise the question whether the model of 'user-oriented systems design' can be used as a general model for exerting influence on the development of S&T.

On the basis of an inventory of Dutch research on 'Technology and Labour' (Ref.15), we selected 18 researchers in 11 research institutes and in the trade unions who are involved in 'user-oriented systems design'. All cases mentioned by these interviewees were studied with regard to whether any coupling of functional and technical specifications of the system to be developed could be expected or were realised. On the basis of a first, exploratory round, it was decided to focus the analysis on four cases in the context of the corresponding research programmes since these cases were frequently mentioned as typical of intellectual lines and could be analytically distinguished on the basis of the documents. We were allowed to study these cases in detail.

The results - to be published elsewhere (Ref.16) - showed adaptation of cooperative efforts to the lack of success in influencing technological developments more fundamentally, either (i) by uncoupling the process of technological and functional specification, and subsequently the process of matching functional specifications with organisational reforms, or (ii) by narrowing down the concept of 'user-oriented systems design' to the operational level, addressing the employee as a potential front-end user and not in his role as an employee.

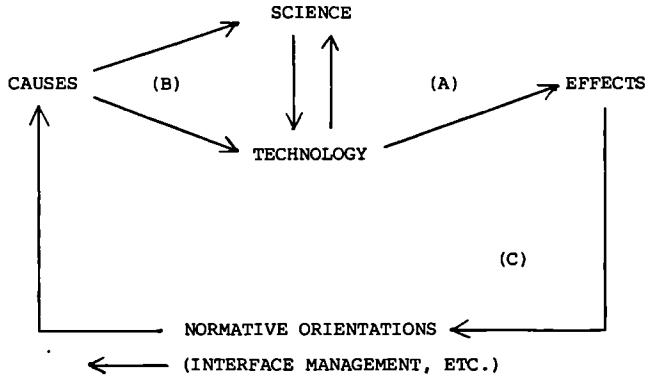
CONCLUSION

What can be expected from cooperation between unions and scientists, given this state of affairs? In my opinion, our conclusions have serious implications for the joint projects of unions and scientists in public institutes, such as those advocated by science shops, etc. Research on the social effects of technological developments has to be distinguished from technological research that is directed toward reaching social goals.

Insofar as social scientists try to cooperate with unions in 'technology assessment' (A in Figure 1), there exist possibilities for implementing a union's point of view in research questions. However, in that case the development of science and technology is effectively assumed, and the main purpose of the study is to explain - or even to predict - the social effects of given developments (such as, for example, office automation). These effects can be studied at the level of specific enterprises, a branch, or of society at large, each requiring its own form of social scientific analysis. The primary aim of such studies is the better assessment or even the prediction of these social effects. Technology and natural sciences are relevant as sources of information. Researchers in the latter disciplines are needed for such cooperation primarily as experts on the relevant future developments. From the point of view of these researchers, this task has more to do with knowledge transfer than with real research.

The cooperation with external groups is a natural complement to such studies. As scientists are used as experts, a need emerges for counter-expertise, which can be provided by science shops and such institutes.

A second group of studies (B) (of which the present account is one) belongs to the sociology of science and technology. Now, S&T and their practitioners are not mere sources of expertise but the objects of study. In these studies we do not focus on the social implications of new technologies but on social influences on the development of S&T. To what extent and in what ways is the development of S&T to be understood by social contexts of S&T? We would like to call this programme the 'science dynamics' programme within the whole area of S&T-studies. In this context, the opinions of scientists and technologists have a different significance: no longer now a matter of expertise and counter-expertise, but a method of gaining access to the relevant domains.



- (A) Technology assessment
- (B) Science dynamics
- (C) A public equivalent to interface management

Fig. 1. Different questions, different research programmes

To the extent that these studies deliver better insights into the steering mechanisms of S&T, they can be useful for those who exert some power on R&D apparatus and possess the economic resources to stimulate developments in one direction or another, such as governments and boards of science-based enterprises.

From the point of view of public interest it is desirable to broaden these possibilities. Other social groups also should be in a position to stimulate natural scientists and technologists to develop technologies which are needed from a social standpoint. (Note that in such a programme natural scientists are not only objects or sources of knowledge but the actual actors who have to perform the research!) However, this requires intervention by the state - or even an interstate organisation (Ref.17) - which aims specifically at the social guidance of technological developments. Only if the political subsystem is capable of developing new functions - and we know that this may sound somewhat utopian - on the interface between a) science and technology and b) public demands which are

not automatically fulfilled by the market, can a perspective be developed in which technological innovation and social renewal are not contradictory but mutually reinforcing.

Mechanisms for the social control of technological innovations can provide positive feedback on the technological developments only if the alternatives - which are always there - are known, and only if choices can be made between them. Access to such choices is, however, blocked by the private ownership of important alternatives. The normal way to deal with this is to discontinue state intervention at that level and to retreat to more traditional regulatory politics. Although such a normative approach can sometimes change the structure of the market, it does not extend but rather limits the technological options by excluding some of them.

In my opinion the need for new forms of social audit is a consequence of shifts in the relations between private enterprise, public authority and science, which have not yet been fully worked out. The general social interest in innovation justifies access to the many options for the application of science and technology on the part of groups other than management. If we pursue a mixed type of economy, this requires a compromise between the private ownership of information and the freedom of information, which in turn constitutes the essential basis for the freedom of science. I think that such a compromise can be worked out within the boundaries of the existing system and that most trade union activities can be interpreted as pursuing such a model of social control of technological developments.

The main point is that politically controlled bureaucracy should not limit itself only to the organisation of industrial policies, but should play a strategic role mediating between public demand, market opportunities and technological possibilities in a way comparable to the role of strategic (R&D) management in complex, science-based industries (Ref.18). 'Cooperation' is in itself not enough; it should be an integral element of a strategic effort to broaden the scope of technological options in public debate and to elaborate these options into feasible alternatives. This strategic effort has to be strongly coordinated at the ministerial level and linked to other areas of policymaking, such as science and technology policies, industrial policy and procurement policy. For example, by means of a prospective White Paper on each industrial and administrative sector, issued once every (two) year(s), the public and Parliament could be informed about major technological trends expected to occur in the years to come. Such White Papers would have a strategic character and could function as

Strategic Planning Guidelines in complex corporations. This means that they should also aim at provoking alternative proposals from the public, and function as a 'top down' incentive in the social control of technology. Positive feedback on technological innovation requires that this 'top down' information be combined with 'bottom up' initiatives.

Given such a model, it is clear that the unions may play an extremely important role in innovation policies on the demand side: they are present where innovative possibilities have to be perceived, i.e. in the interface between enterprises and markets. As we have seen above, many ideas have already been suggested. If they are to become innovative options, however, these ideas have to be taken up through structural possibilities, which must be extremely well managed. Particularly where social organisations or citizens' groups have some access to strategic information through legal procedures (enterprise councils, allowance procedures), they may be able to link pieces of information from their perspective and to offer good counter-proposals. Therefore, it is genuinely in the interest of science and of society to strengthen these rights as far as possible. Good information is a primary requirement for the development of an effective interface with R&D facilities.

Moreover, a set of new forms has to be developed on the supply side. Firstly, this requires a better analysis of the research system and of the parts of it which could be integrated in such efforts. This theme merits a paper in itself (Ref.19). In that context it is even more important to emphasise substance and to think of forms which coordinate outcomes and not only institutional forms. For example, it may be much more important to create a European high quality scientific journal on the specific issues of linking labour interests with technological developments than to create another 'network'.

However, these are long-term, if not utopian goals. In the short-term, it may be a wiser strategy for the unions to limit themselves to the social effects of technological developments, to seek help and counter-expertise in cooperation, and to accept that they are not yet a competent partner for the development of cooperative research programmes. There are (i) too many political and institutional obstacles to their participation in relevant information flows in enterprises, and (ii) the national states are in fact not developing S&T policy structures which allow for participation at that

level. Without an interventionist structure as envisaged here above, practical efforts to combine trade union activities with R&D appear to be completely voluntary.

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Closing Session

ROUND TABLE DISCUSSION

INTRODUCTION

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The purpose of our round table discussion is to arrive at a clearer definition of the conditions for the development of cooperation between research workers and trade unions. The most striking fact to emerge from our discussions thus far has been the shared desire to find ways of establishing a durable form of cooperation in place of the sporadic initiatives to be seen at the moment.

Consequently, at the start of this round table I thought it fit to say a few words about the reasons and identity of interests which warrant our leaving behind this sort of sporadic piecemeal approach to cooperation.

In my view, the central question inspiring the trade unions' desire for cooperation concerns how they can influence technological change. We are living in a real situation which is growing in complexity and over which we have no control. The situation has created a need for new knowledge, a need to tackle new problems and a need for a new approach to industrial change and its technical, economic, social and organisational implications. It also obliges the trade unions to establish a link with the research world so as to influence those research decisions which condition technological changes and new ways of living. The unions therefore want to obtain from the research world the information and knowledge they need in order to influence any decisions concerning the working conditions of their members.

This desire for cooperation is also a reaction to a more fundamental question facing everyone, i.e. the future place and responsibilities of the trade unions and universities in social change. Technological change also brings about a change in the way our societies develop. During the speeches I noticed that the British trade unions talked of forsaking their traditional role of opposition, the Italian trade unions spoke of progressing from a protective type of trade unionism to one concerned with social change or even production, while the French and the Swedish talked of

transition from a type of trade unionism based on demands to one based on proposal, and the Germans of the place of the unions in joint decision-making.

This matter concerns not only the trade unions but also employers and heads of firms as regards the way in which they manage their firms. It concerns the development of 'participatory management', which ultimately means that worker participation becomes the central issue for management. Taylorist methods have long underlain the organisation of work. The growth of abstract forms of work makes this type of constraint partly irrelevant whilst worker motivation becomes a productivity factor and thereby contributes to better terms of employment. This is disturbing not only to management but also to the trade unions: we clearly have a part to play in inventing a new model of production in which the new technologies can be put to use in a more humane and socially responsive manner. From this point of view, Europe is probably confronted with a very particular challenge. On the world level, it is confronted with countries which have, in their own particular ways, solved the problem of worker motivation: on the one hand we have the American model of hyperindividualisation and maximum competition between individuals, which allows of great flexibility for reorganisation in the event of technological changes, while at the other extreme there is - perhaps somewhat more schematically - the Japanese model with total subordination of the individual to society, which also offers its own types of flexibility. All the European countries have models which organise the relationship between the individual and the collective group in a different way and do so through intermediary bodies which, in the production field, are mainly the trade unions. Consequently, a lasting productive and competitive model for Europe is impossible without defining the place of the trade unions in relation to technological change. A positive individual commitment by workers in production depends on the solution of this problem since acceptance of the aims of production can only be achieved in our societies if in return there is a possibility of influencing these aims under the protection of collective guarantees. This is why the development of such cooperation between research institutes and trade unions is of such particular importance to us Europeans.

This conference will give us the opportunity to approach this question from various angles and the round table discussion should enable us to progress in three directions.

1. The first concerns the definition of the place of the trade union in the process of knowledge-formation:
 - (a) in the planning and definition of research work;
 - (b) in the joint conduct of research work (invention of new research methods involving research workers and trade unionists on an equal footing);
 - (c) in the transfer and dissemination of results (publication of results, their use in training and their on-use by the trade unions).

2. The second axis for research is that of the establishment of lasting forms of cooperation between universities, research workers and trade unionists, both in planning and training but also in the field of joint research. Nowadays engineers and scientists work successfully together on problems which they encounter in applying technology. Trade unionists and scientists must define their methodology so that they too can work together on the same subjects.

3. The third area for deliberation is that of the tools of the Commission of the European Communities and the follow-up which could be given to the Conference at Community and national level.

Each of the participants in the round table will deal with a particular aspect: Mr. D. CROQUETTE will talk on cooperation between trade unions and research institutes on a particular topic, Mr. J. STANLEY METCALFE will cover the role of the universities in the development of regional cooperation, Mr. C. FELDENGUT will speak on the role of the national trade union in lending synergy to the efforts at cooperation made at all the various national levels, while Mr. OTERO-HIDALGO will speak on the inter-national aspect of cooperation.

CONTRIBUTION

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Secrétaire Général

Union Confédération des Ingénieurs et Cadres (UCC-CFDT)
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Pierre Eric Tixier said much about the difficulties of joint work between research workers and trade unionists. I should like to add a few comments concerning the cultural difference in the approach to problems.

Trade unionists are practical men with an oral tradition whereas research workers are men of study with a written tradition. The results of a research project often give rise to a report of 100 to 200 pages, which may satisfy the research worker but is of no use to the trade unionist unless he is himself an intellectual worker. If, however, the research worker spends an hour explaining the outcome of his research to trade unionists, he will provoke questions and inquiries. I might provide a practical example here. Last winter France experienced a serious conflict concerning the railways. The trade unions had produced a report on the working conditions of manning crews but it was not used. The management had also carried out research but their report was only distributed in a few copies some two weeks after the dispute had begun. This shows the difficulty of putting the results of work into practice.

The best way of achieving progress is cooperation between research workers and trade unionists in the form of joint work which is enriched by the differences of approach. The research worker applies a scientific method while the trade unionist brings his view of the real facts. I shall explain what I mean by taking an example of research. I refer here to the five year 'Paroles' research project involving the Centre National de la Recherche Scientifique en France (French National Scientific Research Centre) and the CFDT, on the establishment of employees' right of expression. The demand came from the trade union. Trade unionists are in fact a rich source of potential research topics but rarely know how to express them in research terms, whereas research workers are always on the look-out for productive research topics. The potential for joint work on the definition of research topics therefore clearly exists. The project is being managed by a joint committee, which in the long term will doubtless become a tripartite body

because some concerns have realised the potential advantages of becoming involved in the project and are even prepared to participate financially. Thanks to the joint management of the project, the workforce is no longer the subject of research work like monkeys at the zoo but is actively involved in the project and concerned about its results. Those members of the workforce who are involved are also experts in their own field and are more familiar with it than research workers.

On the other hand, the latter can provide assistance in arriving at a better understanding of the problems experienced, expressing these problems in terms comprehensible to outside bodies. This type of partnership can therefore facilitate the dissemination of the results of research among trade union organisations and, in the opposite direction, amongst scientific, political, economic and social entities.

This partnership presupposes a clarification of the power balance between research workers and trade unionists. The trade union will always be tempted by a desire to keep too tight a rein on research, especially where it has serious implications for the trade union itself. Research workers must resist this pressure. At the same time, however, research workers must try to prevent the conclusions from being too heavily slanted towards action as action always tends to oversimplify the results of research. The problem of the power relationship between research workers and trade unions in this context therefore has to be resolved.

Finally, one suggestion: cooperation between research workers and trade unions should give rise to research, a process which, thanks to this conference, is now underway and which can be further enriched by the different national experiences and a commitment from the Community as regards its continuation. For our part, we are certainly prepared to participate in any way we can.

CONTRIBUTION

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Although we are obliged to recognise that close cooperation between trade unions and universities and other research institutes is not well developed, the same also holds true for cooperation between industry and universities. I therefore feel there is a need for some serious reflection on how we are going to make progress in this particular area.

A first point I want to make here is that we should be aware of the complexity and the variety of both research institutes and the trade unions. There are many different kinds of research institutions: universities, small firms and science parks, consultancies, government research and development laboratories, etc. In this research structure, universities do not necessarily play the major role. Therefore they might not always be the appropriate first contact point for cooperation between trade unions and research institutions.

Then, of course, there are different kinds of trade union structures - sector-based, company-based, politically-based, country-based - each with its own research needs. We therefore need to be very clear about the research needs of trade unions and the structures which are appropriate for developing cooperation between research institutes and trade union organisations. At the moment in the United Kingdom those arrangements are organised on a very ad hoc informal basis. It may well be that more structured relationships are required but it does not necessarily follow that we need more structured relationships at this stage. I think we need to discuss those issues very carefully.

We have to ask the question: what are the internal support mechanisms which trade unions will require to secure access to national research systems and what internal structures will universities require to interact more effectively with trade unions?

Reflecting on that, it seems to me very clear that there will be not one best way of making progress in this area. Methods of interaction will have to be chosen which are appropriate to the objectives in view so as to be able to operate effectively.

It is generally accepted that trade union/research interaction relates to social science and sociological research, but it may well be that many of the research requirements of trade unions will concern technological problems and the question will then arise as to how the world of technology is to interface with the worlds of economic and social structure.

I should like to stress the unique character of universities as research and teaching institutions. Many speakers have referred to cultural differences between universities and the trade unions.

1. Firstly, differences in time horizon. Scientific researchers think nothing of undertaking research projects which will only bear their fruit 10-15 years hence. But in the case of cooperation between trade unions and universities, that time horizon needs to be much nearer. How can the time horizon of university research workers be brought closer to the present, and how can the trade union policy-makers be made to extend their time horizons?
2. Secondly, the promotion and status systems of universities are not directed towards interaction with the outside world. People in universities, by and large, do not get promoted by interacting with the outside world but by virtue of internal activities. Maybe the universities will need to review their promotion systems if they are to make effective cooperation possible.
3. Thirdly, it must also be remembered that the outcome of research is always uncertain. Failure is an integral part of the research process.
4. Lastly, universities are of course international institutions. We are now asking them to lend a much more locally oriented direction to their research activity. How can external criteria of interest to trade unionists and others come to impinge upon the process of setting research priorities?

The conclusion to be drawn from this complex variety of structures, needs and problems is that cooperation ought to start from some small beginnings at a very concrete level. What we actually need is some practical steps towards cooperation at city, regional and national level and of course hopefully at European level as well.

And that leads me to suggest that even if we need a diversity of approaches at the current stage, what we need even more urgently, is many more experiments in cooperation. We need some way of generating more

experiments in cooperation, some ways of exchanging and diffusing the results of these experiments horizontally and vertically and some way of then comparing those results together before deciding how cooperation can proceed further.

CONTRIBUTION

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There are three comments that I should like to make.

1. Firstly, even if we have been forced to acknowledge the great variety of forms of organisation, there is nonetheless agreement as to the objective, i.e. better cooperation between scientific research and trade unions so as to exert greater influence over policy decisions. This is, in my view, a very important question at a time when research policy decisions have taken on a strategic importance as regards future production opportunities and future success on world markets. Europe certainly has its strengths and weaknesses. One of its strengths - I would say - lies in the fact that debates on the social components of research policy are possible. It is not merely a question of having production systems which are not subject to errors, as indeed our Swedish colleague illustrated by reference to Volvo and a Japanese manufacturer. It is a question of having production systems which make machines subordinate to men rather than the reverse. Such production systems, I am sure, do stand a good chance on the world market and we can contribute to their development.
2. My second remark relates to the conclusions that I feel we should be drawing. It would seem only consistent and logical to enter into cooperation at local and regional level but these efforts should also be linked up with what is being done at national and European level, resulting in a 'European network of cooperation institutions'. In a situation where finance is tight, and that is true everywhere in Europe, research budgets are being cut. We must therefore capitalise on the combined effects which may result from these relationships. It seems to me that it is an essential task of the European Commission to set up and develop such a network.
3. My third comment concerns the speech by Mr. Leydesdorff, who assessed the scientific impact of cooperation and detailed the various models

likely to improve the effectiveness of the results. I feel it is still too early to give a practical expression to these theoretical models.

Lastly, I should like to say a word about the position of the scientist, which has, perhaps, not been sufficiently discussed. It seems to me that the individual scientist, who is also a worker, must be in a position where he can look critically at traditional objectives and procedures. If such a critique had already been possible, there would certainly have been far fewer mistakes made in the scientific and technological process.

CONTRIBUTION

Prof. Carlos OTERO-HIDALGO
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I shall try to suggest what could be done to ensure that the international cooperation, the value of which we all acknowledge, can continue to develop after the close of our conference.

The first thought that comes to mind is that the know-how as regards the organisation of relations between universities, research centres and trade unions seems to be concentrated in northern Europe. As far as my country, Spain, is concerned, I must confess that the absence of such cooperation is to be explained by problems of a legal nature which made cooperation difficult. More precisely, the new legislation allowing universities to establish closer relations with firms and trade unions has only been in force for a year. The same law also encourages universities to set up 'Social Councils' the members of which may include employers' and workers' representatives.

In my view, international cooperation should not merely involve practical research projects. It should also serve to transpose different models of cooperation. Apart from the potential it offers for greater efficiency and more effective use of financial resources, the fact that international cooperation requires an equivalent degree of scientific and technological knowledge on the part of the scientists and trade unionists of the various countries concerned by such interaction is, to my mind, further justification for promoting such cooperation.

What are the principles which should inspire international cooperation? We should begin from the structures which already exist at national level whilst bearing in mind that, in those countries where cooperation does not yet exist, it will have to be created on the basis of flexible structures. The creation of a European network would help in this respect.

How should such a European network operate? As an independent network of universities and trade unions? Or should it be integrated into the already existing Community networks? Furthermore, would it not be wise to integrate into the network certain non-Community countries such as Sweden which have already acquired vast experience in the field we are concerned

with and from whom we have much to learn? It would not be the first time that a Community cooperation programme was extended to European non-member countries. The Eureka programme is an example which could be used to guide us in setting up the network.

Apart from the problem of cultural differences between research workers and trade unionists, which will only be exacerbated by the internationalisation of cooperation, there is also the problem of financing. Even if international projects do cost more than national projects, the additional cost can be recouped by larger-scale exploitation of the results, a fact which must be taken into account when defining projects. However, additional aid, over and above national aid, will be needed and the Community could make a very useful contribution in this respect.

Moreover, the creation of structures for relations between trade unions and universities will open the door to already existing sources of finance. For example, at the national level, research funds can be used for projects of interest to the trade unions. The same is true at international level. Community programmes often have a social section under which it would be possible to finance, for example, projects concerning the social aspects of new technologies or their impacts in the employment sphere. Thus, if a European network for cooperation between research institutes and trade unions is set up, access could be gained to Community funds, which would mean a new extranational source of finance for multilateral and supranational projects.

CONTRIBUTIONS OF PARTICIPANTS

Mr. Casula Duilio, Rector of the University of Cagliari (Italy), spoke on the practical arrangements for such cooperation. Referring to experiments already carried out under the ECSC Treaty, he said that the Italian universities had opened up to cooperation with the trade unions and employers but added that cooperation focused mainly on safety and health protection at the workplace. The examples quoted during the conference had also mainly been in this field. By contrast, there had been virtually no experience as regards cooperation on social questions connected with the new production methods or applied technology and it would therefore be advisable to set up a working party to look more closely into practical ways of developing cooperation between trade unions and research institutes in this new field.

Mr. Gerhard Neukamm, Professor, Fachhochschule, DGB, (FRG), stressed the mutual value of cooperation between research institutes and trade unions. Trade union demands had resulted in research into topics and in fields hitherto unexplored by research workers and caused the results of research to be examined in greater depth from the point of view of their practical application. He felt it was high time to give an institutional form to such contacts by setting up a European network. Furthermore, interaction between trade unions and research institutes and its enriching effect on both parties was a matter of concern to all the Member States and therefore warranted contacts at European level as well as transnational projects.

In replying, Mr. Otero-Hidalgo expressed his full agreement with the call made by Mr. Neukamm whereas Mr. Leydesdorff drew attention to the possibility of using the mechanisms which already existed in the scientific world such as the organisation of European conferences or symposia and also referred to the not inconsiderable role played by publishing.

Mr. Hinterscheid, Secretary-General of the European Trade Union Confederation, made the point that however important the research of today might be for the products and production methods of tomorrow, it was the workers who were most affected, work being at the root of all wealth-creation, and that working conditions were consequently a factor not to be ignored. However, despite this fact, he felt that research was slanted too far towards improving the competitiveness of firms and that too many

research projects were devised without consideration for employment, working conditions, the various dangers at the workplace, the quality of work, energy wastage, environmental protection, etc. The majority of the experiments described had referred to economic and technological research projects and their social implications whereas the trade union movement was also interested in research projects of a purely social nature. The trade unions wanted a type of cooperation which did not focus exclusively on the integration of social and economic concerns as it was important for research to take account of workers' interests. This was the reason why the workers wanted to gain more influence over research in general and stressed the need to establish structures for cooperation between research centres and trade unions.

However, such cooperation would not be easy. It was often conducted by institutions whose field of activity went beyond that of research as was the case of GLEB, referred to by Mr. Millwood, which was, in actual fact, a local employment initiative.

Mr. Hinterscheid agreed with the view expressed by Dr. Swatek that the governments do not pay enough attention to cooperation between researchers and trade unions as compared with industry. Like Dr. Swatek, he felt that it was important to banish prejudices and to bridge the gap between researchers and workers and that cooperation between research centres and trade unions can give a new dimension to research.

He also agreed with Mr. Weissenbach as regards fine speech making on Sunday concerning the need for more and better research, followed on Monday morning by sombre cuts in budgets and resources. It was therefore not enough to talk of the need for scientific research and development when the money needed to pay for it was not available.

Mr. Gerd Kohler, Referatsleiter, DGB, (FRG), felt that the discussions during the conference would only be productive if there were a follow-up and clearly expressed the desire for a second and third conference. He also questioned whether there was still time for a 'step by step' policy on the lines advocated by Mr. Metcalfe. He held the view that the situation in the metal-working industry or in Spain suggested the contrary and demonstrated the need for immediate help. He said that the trade unions were concerned with a strategic treatment of the problems going beyond the occasional approach adopted hitherto but this was based on the assumption that they were in possession of instruments allowing of a strategic approach to the Community's sectoral policies. He also called for greater involvement of the

trade unions in the technological programmes such as FAST, BRITE, EUREKA, etc. since there could be no social and economic progress for as long as a large section of the population was ignored by and remained victims of developments. Technical progress and social progress should go hand in hand otherwise there could be no valid or lasting solution.

Mr. Klaus Beck, Bundesgeschäftsführer 'Arbeit und Leben' (FRG), put the question to the scientists as to whether the scientific system, broken down as it was into various disciplines, was able to offer the necessary interdisciplinary approach in cooperation with workers whose problems related to a number of disciplines. The question facing the trade unions was the organisation of cooperation in such a way as to take account of trade union structures; Mr. Beck felt there were basically two models: that of the trade unions' own institutes which cooperated with research institutes, and that of integration in science parks. What model did the trade unions prefer or did they support the views of Mr. Feldengut?

In reply, Mr. D. Croquette called for multidisciplinary research teams each member of which would provide a different approach according to his own discipline. Replying to the previous speeches, Mr. Croquette made the following observations:

- international conferences were necessary but they would have to find their own link-up at national level because the cultural differences between countries were considerable;
- it was important that scientists should be trade-unionised but their role as participants in a trade union organisation should not be confused with their professional role as scientists;
- there was a need to evaluate technological programmes and it was important that trade unions should participate in this process.

Mr. Regan Scott, TUC, Research Director of the Transport Union (UK), spoke against a centralised tripartite approach. He supported the call for conferences at national level so as to ensure a more balanced representation of research interests. He observed a certain lack of fairness towards the trade unions possibly attributable to trade union structures. In the context of the creation of a European network, account would have to be taken of this regional diversity and the network should not be confined to central relations. In addition, he welcomed the different treatment which the Commission reserved for workers compared with what they received in the

United Kingdom. Mr. Scott welcomed the existence of the dialogue between the Community and one side of industry and hoped that it would continue because he felt it would be very difficult to integrate the employers in a single horizontal dialogue. His reference to the example of the United Kingdom where the involvement of employers in such research activities gave rise to endless squabbles was applauded.

Mr. Marc Béchet, CFDT (France), said that the conference had been a first major test but one whose success had to be amplified and repeated not only in national conferences but also in specialised conferences in a more restricted context and with an assigned objective. Moreover, he called for the trade unions to be involved in the EUREKA project given what was at stake.

Mr. John Kjgller, IO, Risø Research Center (Denmark), called for a working party to be set up on the lines of what had already been done in Germany so that research workers and trade unions could engage in the joint definition of programmes.

Mrs. Julie Hayes, TUC (UK), expressed surprise at the absence in the speech by Mr. Millwood of any reference to one of the objectives assigned to the GLEB by the trade unions, i.e. the transformation of labour relations at the workplace. In other words, a change in the traditional role of the trade unions from that of opposition to one more focused on management. She therefore wondered whether there was not a need for economic democracy in order to secure trade union involvement in and influence over the development of technology.

Mr. Millwood replied by saying that if economic democracy was one of the objectives, the nature of work had not allowed this objective to be achieved. The GLEB was confronted with other problems such as market problems, loss of resources, danger of bankruptcy, etc. In more general terms, Mr. Millwood felt that there was a need for financial security and the security of jobs and firms before any process of democratisation could be embarked upon.

A question from Mr. Jaap Bartels (Netherlands), concerned the distinction between researchers and workers. Were researchers not also workers represented in some cases by a professional organisation?

Mr. Marcel Bolle de Bal, Professor at the Institute of Sociology of the ULB (Brussels), suggested that there were different sorts of research centres: those concerned predominantly with technology and those with a sociological focus, each of which was faced with its own problems. The

difficulties of collaboration should therefore be scrutinised in a manner which took account of their specific nature.

Mr. Tixier agreed that progress towards setting up new arrangements depended on clear identification of the different types of difficulty which might be encountered.

Mr. Reinhard Kuhlmann, Hans Böckler Stiftung, DGB (FRG), took the view that the conference would be committing an error if it wanted to limit cooperation to the social arena, or any other specific arena, as cooperation was not an aim in itself. On the contrary, the trade unions should start out from their blueprint for society, their view of the development of society, in order to define the requirements and aims of research.

In this connection, Mr. Kuhlmann stressed the need for an institutionalisation of cooperation between research institutes and trade unions which took account of social criteria.

Mr. Karl Jostarndt, DGB (FRG), added that, in examining the need to progress from the projects stage to an institutional organisation of cooperation, consideration should be given to the organisation of cooperation on a tripartite basis covering not only the interests of the workers but also those of the firm. It was quite possible to imagine in the distant future universities having cooperation units which took account of both the interests of workers and those of the firm.

To counter the danger of society drifting unguided towards a situation of 20 million unemployed, collaboration would have to have specific aims, that of the workers being able to participate in the structuring of the economy. Cooperation between research institutes and trade unions can therefore encourage joint decision-making and the democratisation of the economy.

Mr. Stefano Patriarca, CGIL (Italy), raised the problem connected with cooperation concerning the progression of the role of the trade unions from one of worker protection to one of social, political and economic transformation. It was therefore not simply a matter of determining models for the institutions of cooperation but also of gaining recognition for the scale of the problems raised by the trade unions.

More precisely, it was not only the researchers who should come to the trade unions but the trade unions who should also make known their problems to the researchers.

CONCLUSIONS OF THE CONFERENCE

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The time has come to try to draw some conclusions from this first European conference on cooperation between trade unionists and researchers. If we wish this conference to have some kind of follow-up, as the participants are urging, it is important to state what we have learned and to draw from it some priorities for our work.

First of all, it is important to underline this feeling which we all have of witnessing only the start of a process which can only evolve gradually. The development of cooperation requires a change of heart on the part of each partner and the devising of common rules, something which can be done only by setting ourselves intermediate goals which take the utmost account of the diversity of the persons and countries involved.

So, having stressed in my introduction the common goals at stake which made the development of cooperation essential to all, I shall try to respond here to what I understand to be the special interests and objectives of each and the methods of cooperation found which respect this diversity of situations and objectives.

1. A DIVERSITY OF OPERATORS AND OBJECTIVES

The need for cooperation between trade unionists and researchers is part of the general acknowledgement of a change in the place of science and technology in the development of our society which modifies the responsibilities of the universities and trade unions, and the organisation of production. However, this cooperation draws its own dynamism from the recognition of situations and constraints particular to each operator. Several speakers have underlined the difficulty of overcoming stresses related to different viewpoints - reasoning based on social intervention and on a scientific approach - and also the advantage to be gained by retaining

this tension given the risks of merging, which can only happen at the expense of one or other and ultimately of both.

It is therefore important for the development of this cooperation to clarify specific individual objectives. The debate provided several examples of this by adding to the protagonists directly involved: trade unionists and academic researchers, two keenly interested parties which can have an important bearing on available resources: industry and the State.

Where the trade unions are concerned, I shall select from the speeches three kinds of objectives:

- To influence the direction in which research goes and thereby industrial development and lifestyles deriving from it. It is necessary to be upstream of technological options to ensure that the social dimension of such options is taken into account.
- To acquire the necessary skills for comprehending a complex world. This means justifying or adapting union demands and developing the unions' capacity to make alternative proposals.
- To transform themselves. To remain an important operator and to have a strategy, the trade union can no longer content itself with its own vision of things. It needs to make use of and allow itself to be challenged by knowledge which is external to it.

The academics and researchers suggested that, on the one hand, they should come closer to reality and, on the other, they should beware of the imbalances which this process might entail. They set themselves the following aims:

- that of coming closer to society, of being better able to grasp the problems troubling it and to see the results of science put to better use by the operators;
- that of guaranteeing the neutrality of science - some even spoke of liberating science from the market's too firm grasp - by working with both employers and staff representatives.

The State is concerned that research be directed towards the public interest and, in particular, that it take greater account of the problems of production and employment. To this end, the State must rectify inequalities

as regards access to research, for trade unions have insufficient resources to commission research.

The existence of links between university and society guarantees a better utilisation of public resources both initially and as society's needs change.

With regard to the management of undertakings, my experience leads me to note that they have two basic reasons for supporting cooperation of this kind, even outside their firms:

- To render new technology acceptable. The technology has all the more chance of being implemented productively where it has been devised to meet the needs of the workers and we know very well that this is best done if the workers have participated in the process.
- To have responsible partners in carrying out changes. The workers' motivation is one condition of productivity and more and more employers are becoming aware that this cannot be obtained without a collective framework.

2. METHODS AND MEANS OF COOPERATION

Beyond this start-up phase, the phase of convincing people of the usefulness of cooperation, the problems of method become very important. They define not only the effectiveness of the forms of cooperation used but above all determine their regularity and durability.

If we do not face up to this question of methods and means, we shall be left with ad hoc operations teaching little and involving a great waste of energy for all concerned.

The organisation of cooperation must become an aim in itself going beyond specific instances of joint endeavour and the odd few successes. Our discussions help to define the implications of such an objective both for each party and for their common activities. More precisely:

- Each partner must first of all provide himself with cooperative mechanisms which enable him to make his contribution to the process of cooperation and, above all, to enjoy the fruits of that cooperation. Cooperation always means opening one's mind to the world outside - an effort which shakes up our internal routines. Without an internal mechanism which provides for coordination of internal endeavour and an

interface with the world outside, the chances are that the cooperation will not be worth the paper it is written on or that it will fall at the first hurdle.

- The next step is to find joint forms of durable cooperation which make it possible both to regulate the differing approaches of each partner and to ensure a gradual learning process aimed at regular and ongoing cooperation. These are:
 - . Joint operating rules. A code of conduct needs to be defined which guarantees the strictness of the scientific process and the autonomy of the social operator. Everyday practices must be found which respect the viewpoint of each party. This conference, which has above all brought out the difficulties, demonstrates how far we still have to go.
 - . Joint institutions providing an interface, i.e. both guaranteeing the common rules and stimulating exchanges and opportunities for work. The participants, with a single exception, stressed the need for agreements and mechanisms which commit institutions, universities and trade unions rather than individuals.
 - . Procedures permitting the joint devising, monitoring and assessment of specific operations in which cooperation finds practical expression. Of course, the procedures also involve the distribution of tasks to be carried out by each partner and common requests (for resources or access to information) to be sent to administrations or heads of firms.

3. LEVELS AND SUBJECTS OF COOPERATION

Speakers repeatedly stressed the fact that the content of cooperation between trade unionists and researchers should not a priori be restricted. Of course, it should not be limited to what we habitually call social problems; however, on the pretext that this is a question of science and technology, we must also be on our guard against the inverse compartmentalisation, frequently encountered in scientific circles, which consists of dealing solely with questions relating to technological options.

One fundamental advantage of this type of cooperation is that of more easily obtaining an overall view of the situation in all its technical, economic, social and organisational aspects. This makes it possible to approach problems differently without excluding the possibility of dealing

at one and the same time, or in response to individual requests, with purely social or technical problems.

To facilitate the development of cooperation and adjust the resources for it, it is important to identify more precisely the various levels and subjects to which it can be applied.

This conference has shown the diversity of levels at which cooperation can take place. These levels derive, of course, from the specific structure of the operators involved; universities are more able to cooperate at regional level while trade unions are more organised at national level. They likewise derive from the subject of the cooperation: for example, the regional level may seem more appropriate for industrial development objectives. The level of the undertaking, where there is an abundance of ad hoc cooperation, appears on the other hand to be too limited to ensure continuity. The question is not one of comparing these various levels - many experiments undertaken make it possible to coordinate them - it is above all a question of finding ways and means in this context of stimulating and ensuring continuity of joint endeavours, with a constant eye to the problems to be solved.

The role and responsibilities of each party involved in cooperation likewise vary a great deal depending on the objectives aimed at. The experiences recounted over these two days outline four types of objective ranging from the planning of research conducted separately to the organisation of joint research and various forms of transfer of knowledge:

- The participation of trade unions in defining research priorities for universities and regional development centres, usually in the form of a seat on administrative boards.
- The participation of researchers in training trade union leaders with specially adapted teaching modules negotiated between institutions. This is more than merely making universities accessible to workers;
- Carrying out by researchers of expert assessments, consultations and studies on behalf of trade unions. Most of the trade unions have set up their own research departments to develop this commissioning of researchers, usually selected on the basis of their ideological affinity as well as their scientific competence.
- Carrying out of joint research linking the original contributions of all involved while taking account of the differing requirements of the social and scientific operators.

Such joint research between universities and industry is developing apace. It may also provide a fruitful means of cooperation between researchers and trade unionists:

- It gives a researcher access to a fund of knowledge and empirical facts in the possession of the operators in the field enabling him to orientate his own hypotheses more confidently and arrive more quickly at his conclusions.
- It allows trade unionists to understand better and explain to the researcher the nature of problems to which they expect him to provide new approaches. By participating in the research process they are better able to see their own situations objectively and to use the results produced throughout the process.
- It makes it possible to produce knowledge not overly marked by that compartmentalisation often discernible when a number of scientific disciplines are involved. The subjects of the social operators, as those of the industrialists, are by nature multi-disciplinary and afford favourable opportunities for inter-disciplinary cooperation and renewal.

In addition, this opens the opportunity for acquiring knowledge beyond the theoretical stage which can be pursued to its logical conclusion and set against operational knowledge, which in turn is a rich source of new questions.

However, and this has been mentioned several times during the conference, it is essential in cooperation of this kind for great attention to be paid to the role of each party in the research process. This role varies at each stage of the research: definition of objectives, definition of investigative methods, compilation and processing of data, formulation of descriptive and explanatory concepts and the operational follow-up of results. Each of these stages calls for different methods of cooperation and intervention or non-intervention by the academic or the trade unionist. New practices were to be developed which will make it possible for trade unionists to find their place in the general development of cooperation between universities and industry.

4. CONCLUSIONS TO BE FOLLOWED UP

This conference, by the number, interest and quality of the participants, shows that it is meeting a very real need. A number of participants have expressed the desire for a follow-up. I should like to offer a résumé of the ideas and proposals which might be sent to the Commission on behalf of this conference.

Firstly, the variety of operations undertaken means that at this stage it is more a question of providing support for a process of assessment and experimentation rather than launching a full-scale programme with a predetermined idea of products, projects or types of institution to be sustained.

The current need is less to create an additional research programme on topics of interest to trade unions than to expand the capacity of the trade unions to use the results of existing research and to influence the direction of new research. Support could be given along these lines to enable joint research programmes to be established and to provide access to existing technological, socio-technological (such as Fast), industrial (such as Eureka) or training (such as Comett) programmes.

In this way, the possibility of finding financial support is certainly important but assistance for experimentation also consists of an exchange of information, network support and the provision of a methodology.

In practical terms this means we wish to see:

- the working party which launched this initial European meeting continue its work,
- decentralised assessment of situations by means of national conferences,
- support for exchanges of experience, making it possible to establish a methodology particularly as regards interfaces designed to provide lasting cooperation,
- support for a set of experiments by determining from the outset the follow-up and evaluation methods.

I should like to end by thanking the Commission for making it possible for this conference to take place and by offering my warmest congratulations to Mr. Andreasen as its initiator.

CLOSING ADDRESS ON BEHALF OF THE
COMMISSION OF THE EUROPEAN COMMUNITIES

Peter GOMMERS

Director

Directorate-General Employment, Social Affairs and Education

Firstly I should like to say that it is a great pleasure for me to deliver the closing address at this important two-day conference during which we have heard experienced and committed speakers, interesting comments, observations and lively debates culminating in the round table discussion highlighting the central issues and problems concerning cooperation on research between scientists and trade unions.

The introduction to the programme for this conference states that the general picture today is one where workers and their representatives are lacking in experience of cooperation with researchers and research facilities and are unfamiliar with the potential of research and the time scales and working methods involved, while researchers often have little opportunity to become acquainted with workers' problems and thus lose what could be a valuable stimulus for their work.

It was therefore interesting to listen to the description of projects and experiments which have already been going on for a number of years and to learn not only about the progress made in this field but also about the problems encountered, which, as we heard, should not be underestimated.

The first conclusion I should like to draw from this conference is that the various speeches and discussions have confirmed the insufficient level of cooperation and the need to strengthen and geographically extend cooperation between trade unions and the scientific world.

The need for more intensive cooperation has been argued strongly by a number of people from research institutions: their experience of cooperation with the trade unions has taught them to approach certain issues from new angles.

The same need has been emphasised by trade union representatives, from whom it became clear that, once cooperation with researchers had been established, there was a wide range of problems which could be dealt with in the context of work on other subjects.

The cases presented over the past two days, which reflect very different structures, have also revealed a number of difficulties besetting such cooperation:

- ideological and historical barriers
- an ambiguity of roles between researchers and trade unionists.

It has, however, been very encouraging to learn from the conference:

- that the difficulties can be overcome,
- that a fruitful continuous dialogue can be established,
- that cooperation on research between trade unions and researchers can be realised in a successful and stimulating way for both partners thanks to the commitment and perseverance of all those involved,
- and, last but not least, that essential public financial support can be obtained.

One of the suggestions to emerge from the discussion was that the exchange of experience and discussions held at this European conference should be continued, both at national and at regional level, for example by organising seminars.

I should like to say that initiatives taken to organise such seminars will be welcomed by the Commission and that consideration will be given to the possibility of providing Community funds, which are rather limited, to support some of these initial initiatives.

In my view it is decisive for the further progress of cooperation that the dialogue between the two partners be given broad support not only at national but also, and perhaps even more so, at regional level.

I say this because, looking at the cases presented yesterday, it had become evident that activities at regional level are of great importance in the field of cooperation on research between trade unions and scientists.

In his opening address yesterday, Mr. Degimbe, Director-General, underlined the need for the social partners to increase their knowledge and insight into the technological changes so as to be able to master those changes.

This is clearly a view we all support. However, the successful introduction of new technology must also lead to new concepts regarding

personal involvement and responsibilities and should take account of its consequences and future developments.

It is against this background that the Commission attaches so much importance to the joint opinion on 'The Social Dialogue and the New Technologies: Training and Motivation and Information and Consultation' adopted by representatives of the employers' organisations affiliated to UNICE¹ and CEEP² and representatives of the trade union organisations affiliated to ETUC³.

That joint opinion endorses the need for the support of public authorities and the Community in the said fields. However, it naturally refers primarily to the relations between the social partners within the firm.

Yet, if we are to succeed in the development of a European social dimension in our society as a whole, and are to take full account of the human implications of technological and industrial development, it is imperative that all the social actors in the European Community be involved in the process of inventing and applying the new technologies in our society and, likewise, in the policies of research and development at both Community and national level.

It is in this respect to be expected that issues of specific importance to workers such as employment, social security, training, job safety, working conditions and problems of regional economic structure, should stand in the forefront of research topics covered by cooperation between trade unions and research centres.

However, this approach to the orientation of research subjects need not and should not lead to a strict separation between the specific research interests of industry on the one hand and the preoccupations of the trade unions on the other and I should like to take this opportunity to say that, whilst being very much in favour of more intensive cooperation on research between the trade unions and the research centres, the Commission at the same time takes the view that no such separation should be allowed to occur. It remains likewise important to integrate social aspects with economic

¹ Union of Industries of the European Community

² European Centre of Public Enterprises

³ European Trade Union Confederation

aspects of research to the benefit of both sides of industry and of society as a whole.

The aim of this conference has first of all been to bring together from all over Europe those persons who are actively involved in the subject of the conference and to hold an exchange at European level of experience gained in ongoing cases of cooperation.

Secondly, as stated in the introduction to the programme, the aim of the conference has been to consider what future action could be taken by trade unions, universities, research centres and governments as well as by the European Communities.

It is as yet impossible to say what action the European Commission will take in response to all the various suggestions made at this conference, but it will certainly invite a small group of experts involved in these issues to give their consideration to suggestions for concrete initiatives at Community level.

In fact this is one of the basic suggestions put forward during the round table discussion, when it was proposed that the group of experts should consider how to establish coordination structures at Community level by means of which:

- contacts could be established,
- information could be exchanged,
- and activities could be coordinated.

However, it is equally important that the other actors in this field, i.e. first and foremost the research institutions and the trade unions, but also the national governments, should consider what kind of initiatives they could take to strengthen existing cooperation projects and possibly start up new projects.

I should like to thank all the participants and in particular the speakers and round table participants for their contributions to a most interesting and lively conference as well as for their suggestions for the follow-up.

I declare the conference closed.

Biographies

ULF ANDERSSON

Ulf Andersson, who has a bachelor of science degree, first worked in industry and commerce before becoming the adviser to the training and research department of the University of Lund in 1970. He left this position in 1982 to take up the post of Vice-Chairman of the Foundation for Cooperation between Universities and Industry where he has been director of research and development since 1986.

He is chairman or member of the boards of several companies operating in the IDEON science park.

NILS HOLGER ARESKOG

Nils Holger Areskog has directed the clinical physiology department of the University Hospital of Linköping, Sweden, since 1964.

In 1970 he was appointed professor of clinical physiology at the same university where he directed the faculty of medicine from 1970 to 1974 and from 1980 to 1983.

In 1983 he was appointed vice-chairman of the planning council of the faculty of health sciences.

PAUL BERCKMANS

Paul Berckmans is a graduate in sociology. From 1974 to 1984 he was a research worker at various university centres and in 1981 he became project director at the Advanced Labour Studies Institute of the KUL (Kadoleshe Universiteit Leuven).

His research covers fields such as technological innovation, the quality of employment, labour relations, etc.

In 1984 he was appointed head of the Flanders Technology Foundation.

DANIEL CROQUETTE

Daniel Croquette began his career in 1969 as an engineer with the BSN Group (Boussois-Souchon-Nuvelles) where, amongst other things, he was responsible for the optimisation of production.

Between 1971 and 1975 he was a research worker with the Compagnie Française de Pétrole (Total Group) where he also held a seat on the Central Works Council. Since 1976 he has been National Secretary of the Chemical Industry Section of the CFDT (Confédération Française du Travail).

In 1985 he was elected Secretary General of the Union des Ingénieurs et des Cadres (UCC-CFDT).

JEAN DEGIMBE

Before becoming Director-General of Employment, Social Affairs and Education at the Commission of the European Communities in 1976, Mr. Degimbe was Chef de Cabinet to Mr. Roger Reynaud at the High Authority of the ECSC, principal adviser in the cabinet of Mr. Raymond Barre and subsequently principal adviser in the cabinet of the President of the European Commission (Mr. Ortoli).

Since 1976 he has also been vice-chairman of the Management Board of the European Centre for the Development of Vocational Training and chairman of the Administrative Board of the European Foundation for the Improvement of Living and Working Conditions.

KARL FELDENGUT

Karl Feldengut studied economics and, from 1971, was active in the Hans Böckler Foundation. In 1973 he entered the European integration department of the DGB (Deutsche Gewerkschaftsbund).

Since 1975 he has worked in its social policy department, which he has directed since 1983. This department deals mainly with the following problems: social policy, trade union policy, research policy, relations with the political parties and organisations and the policy on peace.

JACQUES FREYSSINET

Jacques Freyssinet is a graduate in law and doctor of economic sciences and has been a university professor since 1975. Since 1979 he has at the same time directed the Institute of Social Sciences and Employment of the University of Paris I. Since 1985 he has been chairman of the 'Education-Employment-Income' group of the National Statistical Information Council.

Mr. Freyssinet is also a member of the scientific council of the Institute for Economic Research and Development Planning in Geneva.

PETER H. GOMMERS

Peter Gommers, who has a university degree in economics, began his career at the Netherlands Central Planning Bureau in The Hague. In 1960 he took up a post at the Economics Department of NATO and from 1963 to 1968 he worked at the International Monetary Fund in Washington. He then returned to the Central Planning Bureau.

In 1975 he was appointed Director of Employment at the Ministry of Social Affairs in The Hague, a post which he left in 1982 when he was appointed Director of Employment at the Directorate-General for Employment, Social Affairs and Education of the Commission of the European Communities.

LOET LEYDESDORFF

Loet Leydesdorff studied biochemistry and philosophy and in 1984 became doctor of social sciences at the University of Amsterdam.

Between 1977 and 1981, he was involved in the creation of the well-known Amsterdam Science Shop.

The societal aspects of scientific research occupy a central place in his publications. We would refer for example to his doctorate thesis entitled 'Workers and technological innovation policy' or a very recent article written for the Scientific Sociology Yearbook devoted to the causes and effects of cooperation between scientific and non-scientific groups.

YVES LICHTENBERGER

Yves Lichtenberger is a graduate in philosophy and a lecturer in economics. After working for a few years as director of socio-economic studies and research, in 1972 he began a trade union career in the CFDT.

In 1984 he entered the Ministry of Research where he is now Executive Secretary for the Technology-Employment Development programme.

JOHN METCALFE

John Metcalfe is a science lecturer at the University of Manchester and wrote his thesis on 'The Diffusion of Innovation in the Lancashire Textile Industry'.

He is now Professor of Economics at the same university. He is co-director of the group PREST (Policy Research in Engineering Science and Technology) which carries out research on technical change and the economic aspects of scientific policy.

Since 1983 he has been a member of the Advisory Board to the Cabinet on Applied Research and Development. This mainly entails the production of an annual report on government research and development policy, which is submitted directly to the Prime Minister.

ANTHONY MILLWOOD

Anthony Millwood is lecturer in economics at the University College of London. From 1970 to 1983 he was economics lecturer at the University of Aberdeen and then the University of London.

In 1983 he became self-employed, his work including lecturing and examining. In 1985 he was appointed councillor and council leader of the London Borough of Hackney. Since 1985 he has been director of the 'Hackney Enterprise Board' and since 1986 director of the Greater London Enterprise Board.

FRANZ NEUMANN

Franz Neumann was born in 1935 and studied chemistry and mathematics, after which he studied political science and sociology.

In 1966 he was awarded a doctorate of philosophy from the University of Marburg and, in 1972, was appointed professor of political science at Giessen.

Since 1981 he has been President of the University of Kassel.

CARLOS OTERO-HIDALGO

Carlos Otero-Hidalgo is an industrial engineer and economist. He is professor at the University of Madrid where he participates in the implementation of a local economic and social development support programme.

Mr. Otero-Hidalgo is a consultant to the OECD, the World Bank and the European Community. It is in this capacity that he has been involved with the COMETT programme and the EUREKA programme in the field of relations between industry and universities.

ANTONIO PIZZINATO

Antonio Pizzinato began his career in Milan in 1947, in which year he joined the Italian Federation of Metalworkers (FIOM) and then one year later became a member of the Italian Communist Party. He continued to rise in prominence within the local and then the provincial FIOM and then within the CGIL (Confederazione Generale Italiana del Lavoro).

In 1977 he became a member of the General Council and subsequently of the Steering Committee of the CGIL. He was elected Secretary General of the trade union at the 11th Congress of the CGIL in the spring of 1986.

DIETER SWATEK

Dieter Swatek is director at the Federal Ministry of Education and Science. After completing his studies in economics, he worked at the Economics Institute of the Free University of Berlin.

Since April this year, Mr. Swatek has directed the 'Universities-Industry, Informatics' department which focuses on the following issues: the improvement of relations between universities and industry, informatics in universities, the transfer of technology and staff.

PIERRE ERIC TIXIER

Pierre Eric Tixier, doctor in sociology, is assistant lecturer in sociology at the University of Paris X. Since 1981 he has worked in collaboration with the CFDT, in particular by drawing up reports on the operation and organisation of the latter.

He is now working at the Institut de Recherche sur les Sociétés Contemporaines in Paris.

Mr. Tixier is the author of numerous articles and books of which 'Participatory Management and Trade Unionism', 'A Different Form of Trade Union Organization' and 'A New Model for Enterprise: Rationality and Domination' are but a few.

MR. WEISSBACH

Mr. J. Weissbach is vice-chairman of the Lower Saxony branch of the DGB (Deutsche Gewerkschaftsbund). He holds a doctor's degree in theology. During the period 1969 to 1974 he worked as scientific assistant for theology at the University of Gottingen.

In 1974 he was appointed head of the Oldenburg University Centre for Further Education in Science. He has published dissertations on the subject of university/trade union cooperation and higher education, as well as a research paper on university access for employees with no secondary school qualifications in Lower Saxony.

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Throughout Europe, the potential offered by the new technologies has meant that the objectives of more extensive cooperation and a better exchange of information between universities and other research centres on the one hand and industry on the other are being pursued more intensively than ever.

So far, however, workers and their representatives and researchers at universities and other institutions have rarely succeeded in setting up permanent structures for cooperation on research.

The general picture is that workers and their representatives are lacking in experience of cooperation with researchers and research facilities and are unfamiliar with the potential of research and the time scales and working methods involved. Likewise, researchers often have little opportunity to become acquainted with workers' problems and thus lose what could be a valuable stimulus for their work.

How should this gap be bridged?

This was the main purpose of the European Conference on Cooperation between Research Centres and the Trade Unions – the first of its kind – which, on the initiative of the Commission of the European Communities, was held in Brussels on 15 and 16 June 1987 and which is the subject of this EUR report including the addresses delivered and discussions held at the conference.

Over 250 representatives of trade unions, universities, research centres and national administrations took part and were able to exchange experiences and discuss the various forms and structures which such cooperation might ideally assume and what initiatives might be desirable at national, regional and European level. For, despite the differences of viewpoint, the diversity of forms of cooperation, very different traditions and, in some cases, the total absence of such cooperation, the participants were unanimous in the view that measures must be taken to develop cooperation between trade unions and research centres at national, regional and Community level and to ensure its durability.



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