The Reform of Technical Education and Training in Great Britain.
A comparison of institutional learning in Europe.

Introduction

This journal deals with issues in the charged arena between science and practice. One of the most important landmarks in my professional life was to become active in this charged arena and observe how scientific findings from international comparative studies influence the further development of a national technical education and training system. I firmly believe that this type of institutional learning through publications is extremely important and probably occurs more often than documentation reflects. These learning steps may include international elements although they operate outside the formal, international vocational education and training programmes in Europe. It is for this very reason that they are worthy of description. Their importance possibly even overshadows the flood of recommendations, guidelines, programmes and pilot projects which can be found at this level of the EU.

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Materialization and organization of a reform workshop

In 1975 I took up a position as a research fellow at St. Anthony’s College in Oxford. Shortly beforehand my thesis supervisor in Münster had introduced me to visitors from Great Britain who were interested in the situation of German engineers, executives and entrepreneurs. They were keen to discover how British industry could improve its efficiency by drawing on the experience and practices of management and the education and training of technicians and engineers in other countries.

The immediate objective of my own work in the United Kingdom was to conduct the British segment of a comparison of organization, vocational training and industrial relationships, which was to be added to an already running comparative study of France and Germany. This was mainly ‘basic research’. The project was structured according to the ‘societal effect’ approach in work, organization and industrial relations, which was developed through research conducted by the Laboratoire d’économie et de sociologie du travail in Aix-en-Provence (Maurice et al. 1982).

Although our approach had an interdisciplinary academic character, the initiative for the comparative study came from a
French governmental body which wanted to know why hierarchical differences in salary were much greater in France than in Germany. Thus the study was a mixture of commissioned research and basic research. Given this situation, I too was motivated to bear in mind guidelines for future applications and was called upon to meet the above-mentioned researchers visiting Münster. The party included Michael Fores from the Department of Industry, Peter Lawrence of the Department of Mechanical Engineering of the University of Southampton who at the time had just launched a project on German engineers on behalf of the Ministry of Industry, and Liam Hudson, Professor of Psychology in Edinburgh.

After taking up my position in Oxford, I stayed in touch with these colleagues in Great Britain. The most important exchange of information occurred during a series of meetings at the Ministry of Industry. Here we dealt in regular succession with and made comparisons at an international level on topics under the general heading: "Engineers and executives in industry - patterns of socialization, functions, work organization, organizational structures and industrial relations". A wide spectrum of people came to these meetings: industrialists, ministerial civil servants, scientists, journalists, political and work relations representatives. We discussed these subjects in an unusually open and easy manner, not at all restricted by formalities. A workshop atmosphere prevailed. As the organizer; Michael Fores proved to be provocative and stimulating. His preparatory and opening papers bore his undeniable signature and humorously provided for a positive atmosphere and a high level of involvement.

Attendance at these meetings varied according to the topic. Very quickly a core group of more or less regular participants emerged, however, and even met frequently between meetings. This hard core included in brief:

1. Michael Fores, the organizer, was a civil engineer by profession with many years' experience, particularly in bridge construction in different countries (Greece, Turkey, Australia to name just a few). He then found himself in a more academic milieu, which - since he had studied at Cambridge - was not so surprising as his down-to-earth practical disposition might have suggested. He was interested in issues concerning engineering professions and engineering from a historical, philosophical and economic perspective. This had led to his appointment as 'internal consultant' in the Ministry.

2. Peter Lawrence had studied history before moving on to sociology. He left his tenure position as a lecturer in organization at the University of Strathclyde (Glasgow) to work on a temporary project on German engineers. During his military service he had acquired a knowledge of German language and culture.

3. Ian Glover was a sociologist working on a doctorate on theories and research findings on management behaviour. He had an outstanding ability to compress an incredible amount of information into an unbelievably comprehensive bundle and still extract a solid line of theory. The sometimes violent tone of our arguments, which was highly favoured within the group, is best reflected in his publications (see e.g. Glover, 1992).

4. I myself brought my project into the forum and felt that the discussions on engineering, engineers and business executives concerned me in two different ways. On the one hand, precisely those aspects which had been relatively important to my work in Münster were seen here from another point of view. On the other hand, I was able to build upon the interests which I had developed while flying and in the armed forces.

This inner circle met quite often privately, in varying constellations, and the meetings at the Ministry of Industry usually ended in a nearby pub. Both Ian Glover and Peter Lawrence had research contracts from the Ministry; I myself had none. However, the solidarity we had was less based on contracts and financing. More important was the slowly growing conviction that we were working together on an exciting project and we had much to share with each other. Although the core of the group consisted of scientists and researchers, we all emphatically agreed that current scientific conceptions and academic activity were leading to a dead

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end. Michael Fores was the most vocal advocate of this position.

'More established' individuals also used to make their appearance in the group: Liam Hudson, who was working on perception structures among engineers and scientists; Alistair Mant, who had been a psychologist at the Tavistock Institute for many years and had just written a provocative book on British managers; the military historian, Correlli Barnett; and later on, the organization and management scholar, John Child. Some decisive groundwork was provided in an excellent survey of management research in Germany compiled by Brigitte May on behalf of the Ministry (May 1974). Peter Lawrence's engineers' project (Hutton et al. 1977; Hutton and Lawrence 1982) and my project (Maurice et al. 1980; Sorger and Warner 1986) produced further reports. In various constellations we also wrote articles for journals.

A large percentage of these papers was conceptual in nature or written for 'internal use' only. On the whole the larger group lived mainly from the fact that it pushed discussions far beyond the limits of available and verified articles and discourse. In the process, a wealth of hypotheses was formulated almost in passing and each of us could draw on these in our daily work.

The relative stability, complementary interests and thematic harmony of the hard core of the group prompted Michael Fores to call it 'the barbershop'. In England, a barbershop quartet is a small group which sings in chromatic harmony. The term originates from the days when barbershop employees used to sing at work to amuse themselves and their customers.

**Leitmotifs for the development of vocational training**

After a year, the barbershop was 'singing in harmony' to some relatively well-defined leitmotifs which had become well-established by the end of 1976. They can be summarized as follows:

1. The efficiency of British industrial enterprises is impaired by the limited prestige which engineering and engineering occupations enjoy in the social hierarchy, the education system and the organization of enterprises.
2. In Great Britain, engineering and engineering occupations not only attract far fewer highly qualified school graduates but in enterprises they also tend to lead to a dead end in terms of career development (Bayer and Lawrence 1977). Occupational advancement is usually linked with a generalist management orientation.
3. Practical qualifications, detailed knowledge, expertise and stability in an occupational position are undermined by both the environment and formal structures (personnel policies, labour market). To this extent, the devaluation of engineering is part of an overall cultural and institutional syndrome. More highly regarded positions and educational paths stress change of discipline, de-specialization and frequent change of jobs.
4. Enterprises pursue strategies which excessively accentuate financial, accountability, commercial and political criteria. Attempts to 'de-technicalize' and de-specialize management have led to the neglect of engineering innovation, effectiveness and efficiency.
5. Practical experience, vocational training and academic education have developed such a prevailing logic of their own in society that they all too often impede competence within organized structures. In the United Kingdom, more than anywhere else, competence appears to be an individually based, uncertified and untested result of an educational process which, as a whole, cannot be controlled. The status which special educational institutions enjoy is overrated in comparison with practical and specialized aspects.
6. Society's image of engineers and technicians is far too fragmented into individual areas, each with its own activities, professional associations and social status. 'Engineer' is a term which covers a wide range from 'craftsmen', who are not held in high esteem, all the way to graduate engineers who attempt to compensate for feeling inferior to academics at respected universities by stressing the scientific nature of their work, thus running...
the risk of becoming too far removed from practice.

(7) In a similar manner, the organization of enterprises is fragmented into subgroups defined by profession, function and status. This hinders efforts to find a collective common ground for a course of action. Engineering, in particular, does not appear to be a potential link to transgress these group boundaries.

(8) The world of British culture and institutions does not have a separate place for engineering between ‘arts’ and ‘science’. Engineering is one-sidedly viewed as being part of ‘science’. In contrast, Northern and Continental European perspectives tend to allocate engineering just as highly regarded and more precise a place alongside the arts and science.

In addition, we sharply criticized universalistic and normative management theories. Our mentor in this field was Hartmann who had drawn attention to the cultural and societal relativity of management doctrines as early as 1959. Up until the end of the 1970s, however, German management practices were deemed antiquated, especially when compared with those in the United States. Hartmann was without a doubt the first to criticize these shortcomings emphatically. In 1973, the consultants Booz, Allen & Hamilton issued a report commissioned by a highly official source. This expertise found fault with the backward management and organizational policies of German enterprises. It pointed to a slight tendency towards the formation of ‘divisions’, the negligible separation between staff and line functions, too imprecise estimates of the economic viability of projects, personalized styles of management and similar shortcomings in the eyes of fashionable management theorists of the time. Hartmann objected to this view, stressing that such criticism could not be based on proven functional deficits. He maintained that cultural imperialism was at play (Lawrence 1992, p. 94f.).

We did not reflect on partial solutions to narrowly defined problems - such as efficiency, competitiveness, vocational training or management practice; instead we held comprehensive discussions in which we critically compared cultural aspects and institutional practices. In the process, we continuously sought the interdependencies among educational systems, industrial relations, enterprise organization, social history, social stratification, views on engineering, and business economics.

Passing on the message

The organizer of our barbershop and the larger think-tank, Michael Fores, now formed a network of personalities susceptible to the message. The contents of our work also made their way to the more operative departments of the Ministry where they were taken up, reappraised and made public in more prominent conferences. In 1976, a conference was organized under the direction of the permanent secretary of the Ministry (Peter Carey) which was attended by Michael Edwardes (Chairman of British Leyland at the time). The conference reports were published by the HMSO (Fores and Glover 1978). In addition, a working paper had been drawn up in the Ministry summarizing the main findings and indicating courses of action, and this was ‘verified’ at the conference.

Leading newspapers took up the message very willingly and enthusiastically. At the time, the general public was also very favourably disposed to criticism of conditions in Great Britain. One could not complain enough about the professions, generalist management, the neglect of engineering and deadlines and other things. As a foreigner, I was downright afraid of such debates. On the one hand, I wanted to avoid haranguing in the country in which I was a guest. On the other hand, this manner of criticism divulges uncertainty with regard to realistic courses of action more than anything else and runs the risk, in the emotional exhaustion following such a diatribe, of doing nothing more than consolidating existing conditions. On more than one occasion, it was suggested to me that, although it was perfectly understandable and endearing that I was an anglophile, I should nonetheless state my position clearly as was right and proper for a German.

Although our message included wide-ranging cultural and institutional criticism, our reflections were limited to a much greater extent than on partial solutions to narrowly defined problems such as efficiency, competitiveness, vocational training or management practice; instead we held comprehensive discussions in which we critically compared cultural aspects and institutional practices. In the process, we continuously sought the interdependencies among educational systems, industrial relations, enterprise organization, social history, social stratification, views on engineering, and business economics.
The pressure to specify operational fields of activity included wide-ranging cultural and institutional criticism "(...) in the area of the structures of the educational system, in particular technical education, and the order of professional associations of engineers(...)"

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we were under pressure to specify operational fields of activity and to draw more explicit conclusions concerning segments of our work. These fields of activity fell to a very large extent into the area of the structures of the educational system, in particular technical education, and the order of the professional associations of engineers. This of course was contrary to our orientation towards 'social analysis'. Our interest in these issues was not overly developed for the reason that our barbershop was on the whole dominated by sociologists. Actually the man who most often played the role of the social analyst in the group was the experienced bridge builder, Michael Fores, who time and again drew our attention to the need for a parallel and coordinated development in differentiated segments of society.

Remarkably, he drew on practical experience to come to exactly the same conclusions which were also at the forefront of the 'societal effect' approach developed by Maurice et al. (1982); social action in a differentiated sub-section of society is always linked through chains of interdependency with social action in all other sub-sections. Through these chains of interdependency, action always remains specific with regard to a particular society, and indeed even through periods of social change. Accordingly, sweeping changes can only take place if a concerted effort is made which extends beyond sub-sections. At the time I was unaware of these links between Fores and Maurice. In retrospect, however, the connection between the two becomes all the more obvious and reveals a complementarity of a basic scientific orientation and application to practice.

Learning from international comparisons had a considerable impact to the extent that conditions in the Federal Republic of Germany were held up as a shining example for the British. I found this stylization alarming. But the fact remains that German vocational training, the amalgamation of engineering tasks and business management, the high regard given to engineering and engineers in Germany as well as the central role of skilled workers in German enterprises had aroused extraordinary attention. If anything, the interest of that period (1975-1977) has significantly increased in the meantime. Although I was partly responsible for this development, it still leaves me feeling somewhat uneasy. With time, a trend developed towards an uninspired, propagandistic stylization of the 'German model' which totally ignored the social environment and other relevant aspects; and nowadays this is probably turning into equally uninspired criticism of the system.

For the 'purpose' of effecting lasting social change, following German models, Fores did not have a replica of German conditions in mind. He was thinking of a 'society for manufacturing' as a sort of social movement of differentiated functional elites. This society would be dedicated equally to the promotion of the status, attractiveness and coherence of engineering professions in the educational system, administration and trade and industry. The impetus for such a social movement extends far beyond the boundaries of a single ministry, however. In other words, as an apparatus, the Ministry had problems with such an objective. Nevertheless, it responded with relative eagerness to proposals to do something to improve the status and training of engineers. This was not an easy matter since it touched on the fields of action of quite different ministries and highly autonomous bodies. Especially in Great Britain, competences in the educational system are held in an unusual manner by professional associations, universities and local educational authorities.

Next a Commission was set up true to the British tradition of having a Royal Commission made up of independent members (high-ranking functional elite and dignitaries) work out important reform issues. This Commission was headed by Monty Finniston, the former long-time Chairman of British Steel. At this point in time I lost direct sight of their work because I finished my project at Oxford and returned to Germany. I remained in very close contact with the barbershop, however, especially through Michael Fores' stays at the Wissenschaftszentrum Berlin (where I then worked).

Precisely at this time (1978), just when our preparatory work was beginning to bear important fruit, a strange and paradoxical development occurred. While the
Finniston Commission was serving its function, the principal organizer and catalyst in the matter, Michael Fores, was becoming more and more demotivated in his work. One of the main reasons was the disrupted relationship with his new direct superior who kept asking for further instrumental steps of action, while Fores felt the most urgent task was to push forward a social movement as described above through persistent intellectual stimulus. The civil engineer was in other words unable to stick to a technocratic or instrumentalized perspective. He understood fully realistically that partial solutions which built on existing institutions were absurd. Reform would have to be grounded by the very wheels which had been responsible for the established faults in the first place.

Michael Fores increasingly came to the pessimistic, although realistic conclusion, that it was impossible to make headway in the matter under the prevailing conditions. The difficulties appeared quite clearly to be political and social in nature. This does not mean, however, that the conflicts had mainly to do with the party politics of the time. After the Thatcher government came to power, there were drastic changes in economic policy measures with more incentives to increase profits. The promotion of technology and engineering and their importance for business managers seemed by comparison to be of secondary importance.

The barbershop had set its sights on issues which, one might say, did not fit on any political agenda. The Conservative government did not have it high on its priority list once the Labour government had likewise placed its priorities elsewhere. They had also stressed economic policies, although from a Keynesian and subsidization angle. In a nutshell, Fores and the barbershop most definitely had the right concept, but they were trying to implement it in the wrong society.

Given this situation, it is understandable that Michael Fores gave notice at the Ministry just when his principal concern was clearly starting to bear fruit. Since then he has dedicated himself to the autonomous and fallow activities of a private scholar (see e.g. Fores 1979) and commentator. As an engineer with a keen sense of reality, he could not get around the following fact: it was not conceivable to pursue the larger matter at hand instrumentally and the prevailing social and political situation and his own personal circumstances appeared to render an instrumental approach nonsensical. He was, however, being forced to assume an instrumental disposition. Subjectively faced with the choice between the usefulness of his own work in the eyes of the hierarchy and truthfulness, he chose the path of honesty. This full-blooded engineer became a private scholar so as not to become a technocrat.

**Results of the reforms**

One of the first results of the reforms was based on information from a study conducted by Lawrence (Hutton et al. 1977). These authors had shown that institute-trained engineers, as a category of experts who have had a great deal of daily technical experience in the field in addition to a sound education, are under-represented and do not enjoy sufficient recognition in Great Britain. This was impeding the important lines of communication between the shopfloor and the factory on the one hand, and development, planning and management on the other. The findings also showed that institute-trained engineers make outstanding heads of production, a job where open lines of communication are especially important. The authors also wrote that the status of institute-trained engineers was not far removed from that of their university-trained colleagues. They went on to say that this minimal difference helped to raise the weight and standing of production in an enterprise. In passing, it should be noted that the head of the project, Stan Hutton, was a professor of mechanical engineering who had had practical experience in Great Britain and Germany.

The impulse was taken up in the following manner: In 1976-77, courses were introduced in various institutes of higher education with the aim of turning out highly-qualified and respected heads of manufacturing. The courses were much more general in technical terms than their German models. They combined practi-
cal training in enterprises with studies in sandwich courses. The universities which offered these courses of study were the more selective and elite institutions (Cambridge, UMIST, Imperial College, Brunel/Henley Management College, etc.).

This was a reasonable step towards raising the status of manufacturing engineers. It ended up, however, in the creation of an elite, new type of education for manufacturing managers. It failed to establish a category with any substantial influence in numbers to bridge the gap between academic engineers and workers and lower-level engineering staff. Unlike the German institute-trained engineer, this new type of qualification was not designed to the same extent to meet the needs of small and medium-sized enterprises. In addition, given the status of the institutions involved, the course was not suitable for skilled workers or engineers. Thus, the new institution did nothing more than follow in the wake of current courses. No drastic changes occurred.

The Finniston Commission produced very similar results. My interpretation is based on the account of Lee and Smith (1992: 193-195). An assessment of the Finniston Commission from the barbershop’s perspective can be found in a publication by Glover and Kelly (1991). In accordance with the proposals made by the Commission, an Engineering Council was set up as an umbrella organization above the various splintered engineering associations. It replaced the former Council of Engineering Institutions (CEI) which had an extremely weak position and was not taken seriously. It should be noted that this was not a result of its symbolic provision or the top-quality personnel at its head.

Chairman of the Council of Engineering Institutions at the time was the Duke of Edinburgh who, as a naval officer and war veteran, had anything but a royally distant relationship to engineering. At Michael Fores’ I was able to take a look at the correspondence between himself and Prince Philip. The Prince’s comments were concise and well-informed. As a cultural hybrid with a sound knowledge of Germany, he was in a better position than most Britons to understand the comparison between Germany and Great Britain. However, neither his status as a member of the royal family nor the weak standing of the CEI allowed scope for behaviour that was anything other than ceremonial or cautious.

The appointment by royal decree was now to prove the undoing of the successor to the CEI, the Engineering Council. It was thus placed outside the normal legal and regulatory avenues. According to Lee and Smith, this ceremonial trait ensured that its competences remained limited. Nevertheless, the Council was able to push through a skeleton outline for classifying engineering degrees according to level. The graded categories of Chartered Engineer (C.Eng.), Incorporated Engineer (I.Eng.) and Engineering Technician (Eng.Tech.) seem to be reminiscent of the well-known German qualifications of Dipl.-Ing., Dipl.-Ing.(FH) and Technician. These certificates brought school/academic education and practical experience together and attested these combinations more succinctly than the previous lists of labels.

Furthermore, the Council made a real effort to advertise courses in engineering professions and to tap talent reserves - especially women - for the profession. Despite this, the percentage of new applicants for corresponding courses of study in establishments of higher education fell from 13% to 8% between 1982 and 1990. What’s more, a great many of the students studying these subjects at British universities were (and are) foreigners. Lee and Smith (1992: 194) remark that technical education tended to become even less popular during this period. This could be attributed firstly, to a trend towards deindustrialization during this decade and secondly, to the fact that other courses of study were more successful and more credible in conveying the impression that they were better structured and would open up more lucrative and highly regarded career prospects. Furthermore, implementing specialized practice-oriented aspects into the curricula, in accordance with the German model, had a detrimental effect; courses - which were still very short (three to four years) compared to the length of such studies in Germany - became overloaded, which detracted from their popularity. As a con-
sequence, thought is once again being given to making technical university education more generalistic and to leaving application-related specialization to postgraduate courses and professional practitioners.

Thus, the complex of problems was tackled with quite remarkable measures. This did not really solve the fundamental problem, however, but reproduced it more or less innovatively at a higher level. Hardly anything dramatic has changed in the undermining of engineers with regard to social prestige, payment, career opportunities, the scholastic calibre of newcomers to the field and the weight they carry in enterprises. Top enterprises in Great Britain, especially in the area around Cambridge and the Thames valley northwest of London, have made definite progress, however. In contrast, traditional industry has disappeared in frightening proportions. This reflects the inner conflict of engineering and industrial structures in Great Britain when it comes to traditional industry on the one hand and high-tech on the other. This difference runs parallel to regional divisions, the gap between the north and the south and the stratification structure.

Now at the time when our findings were becoming well-known outside the barbershop, S.J. Prais of the National Institute of Economic and Social Research showed great interest and contacted us. He himself was in the process of launching a series of commissioned research projects dealing with the connection between vocational training and productivity. Here, too, it was becoming obvious that government offices were catching on to the idea as a result of their activities in the barbershop and its projects. Vocational training in the dual system now appeared, as had been the case previously at certain times in Britain, as a means of helping to solve economic problems.

Over the years Prais and his colleagues were able to prove in an exceptionally convincing manner with a whole series of comparative studies on vocational training and productivity in various pairs of business areas in Great Britain and Germany the extent to which detailed differences were apparent in the respective businesses in the two societies, how they differed according to sector and occupations, and what the connections were. The studies by Prais et al. (1989) and by Steedman and Wagner (1987; 1989) can be mentioned here as examples. The commenced trains of research and argumentation were given a substantial boost, both from the economic and the work educational angle.

Once again wide debate was prompted in Great Britain through these projects. The results have now become visible, although they cannot be described or discussed in detail here (see, however, Bulletin No.1 1994). It is noticeable, nevertheless, that despite radical institutional changes, the trends that developed under the Thatcher governments were evident here as well: the corporative responsibility of the social partners in the Industrial Training Boards was reduced rather than made more effective. Although authority for training became more regionalized following the German model, a widespread implementation of sufficiently demanding and nationally recognized occupations has not been secured in my opinion. My forecast is that the new system will lead in practice to a certain formalization and consolidation of company skills, which in the course of the 1980s found their place between craft skills and pure semi-skills. The backbone of the system is made up of the individually operating enterprises, at least when it comes to qualifications below the level of technician.

In addition to the above, however, a good number of initiatives were developed to improve school-based, general educational foundations for vocational training through the creation of a national curriculum. Formerly there were scarcely any compulsory subjects in British schools and no specification of achievement goals for secondary school final qualifications. Now the individual achievement ethos typical of British society according to which life is what you make of it will certainly change. Accordingly, it can perhaps be expected that vocational training will emerge in the long run from its unfortunate role of either compensating for shortcomings in general education or failing because of them. This problem, too, was broached in the barbershop.

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As a result “(...) wide debate was prompted in Great Britain through these projects.” The results have now become visible.
Overall assessment

Our general appraisal shows ambivalence. We are satisfied about the sustained institutional activity and continuous strands of research that have evolved, yet sobered by the dilution of the effects. The following specific development is important: vocational education and training in Great Britain has undergone very sustained change as a result of the comparison with other educational systems in Europe and with Germany in particular. This has meant a harmonization of educational paths and formal qualifications in the superficial sense only, however. The results of institutional learning in Great Britain that evolved over a long period of time were quite different from the model that developed in Germany. One can learn very effectively from the comparison without the institutional patterns of the two countries becoming more alike. In this respect we are referring here to a type of learning that is imperfect only at first glance. To my way of thinking, it is perfectly European in the sense that an international comparison results in different local and national outcomes. What Europeans have in common is an awareness and the knowledge that similar problems are similar only at first glance, and that for this reason they have to be solved differently in different places. (…) The common ground among Europeans does not exclude differences and diversity.

This assessment requires us to take a look at the experience gained at the boundary between scientific research and public action. European learning is founded on comparison, and this comparison should have a scientific basis. Having said this, learning for practical purposes also means, however, that the institutions, ideologies, powers and interests connected with learning are employed to their best advantage. If we examine the boundary between science and practice in our barbershop, we notice that the type of work commissioned at this boundary is of minor importance. The relevance of our activities resulted from the considerable closeness and autonomy of the interaction in the barbershop and its sphere of influence. In this interaction, no distinction could be made between the roles of science, basic research, applied research and practical planning.

What is also obvious, however, is that this distinction became more and more relevant with time. Perhaps nothing else is imaginable under circumstances of instrumentalized administrative action in view of the weight of value-rational and traditional institutional patterns and considering established factions and political currents. This in turn shows that practical action is decidedly moulded by value attitudes, tradition and established interests. These influences are not neutralized by adding a scientific basis or by research, in the long run they are simply reinforced.

The obvious results of the efforts which found their expression in the barbershop were not based - as we have seen - on the division between applied research and basic research. In keeping with other experience, the type of application-oriented research following an enlightenment model had far-reaching repercussions; it can do that because it is also oriented towards basic research. It is based on open dialogue, and it is not rigidly restricted in its objectives and methods which can be constantly adapted. Regardless of how basic the orientation is from a scientific viewpoint, it follows a pragmatic model of policy consultancy, however. Bulmer (1978) presents a detailed account of such observations. Pragmatic consultancy presupposes open dialogue between social actors and researchers. We certainly had an abundance of that in the barbershop, and British social conventions among the differentiated elite in informal circles of friends seemed to me to have an exceedingly positive effect on this particular consultancy model. As a German in Great Britain, this was one of the lessons I learned.

The relations in our barbershop and environments could be appropriately characterized by reverting to the image of “reflexive modernization” (Beck 1986). This modernization in which we were involved did indeed contain a generous portion of reflexive, scientific appraisal of our own possibilities and conditions. With further development, social practice became de-

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tached from the reference points created by scientific study, and it followed traditional paths - which applied to innovativeness as well. In the final analysis, it could not have been any different. As mentioned above, adherence to a reflexive modernization would have required a type of social movement beyond differentiated segments.

Great Britain would have to have the worst possible conditions for this. Everything we know about corporatistic concerted action in Great Britain verifies the weakening of any corporatism whatsoever in this society compared with a highly stable and growing corporate individualism, and this has been the case for a long time. Perhaps the Thatcher governments were right in a far more fundamental way that we thought at the time. They simply put all their money on strengthening all those things in British society that were well-ingrained and thus more easily attainable.

We had already developed this semi-resigned perspective on things back in the barbershop days. Reflecting on engineering work and every other type of work had obviously preserved us from exaggerated opinions in the sense of highly scientific approaches (Fores and Sorge 1978). It was also the source of our long-standing criticism of schools of thought that saw the scientific basis as the hallmark of professionalized occupational work. This ideology seemed to us to be one of the factors responsible for the fragmentation and depreciation of engineering work. When a scientific approach replaces empirical knowledge, then occupational practice would appear to be some sort of slave to science (Child et al. 1983).

We countered this position with the view that new scientifically-based knowledge also paves the way for new empirical knowledge. Practice always transcends scientific and other formally recorded knowledge (Sorge 1985). Application of knowledge amounts to transcendence of knowledge. More and more work-sociological research emphasizes such transcendent achievements. In a society where the scientific approach enjoys high public regard, those who transcend the current state of science are appreciated, powerful and effective. This is the case in research as in every other conceivable field.

Such dialectics on highly scientific approaches on the one hand and on 'practification', 'traditionalization' and 'cultural autonomization' on the other seemed to us even at that time to be integral parts of occidental development, and in fact essentially uninterruptedly through epochal changes. We had developed and proclaimed a good deal of scepticism on this trend - from the Middle Ages to the modern, and now allegedly from the simple to the reflexive modern. To my way of thinking, it has been outstandingly confirmed by all other trends observed since then - real trends and trends in social dialogue.

Our overall appraisal can thus be summarized. Given the closeness of our interaction in the barbershop and beyond it, we were working under excellent conditions. As academics for the main part, prevailing traditions, institutions and powers caught up with us. Our work certainly had far-reaching repercussions, but with regard to social practice, different consequences than those we were able to anticipate. This corresponds to the above-mentioned enlightenment model of consultancy. Enlightenment fosters emancipation, but what the emancipated do is unfortunately - or fortunately - beyond the control of the enlighteners.

Bibliography


"The obvious results" of our efforts "were not based (...) on the division between applied research and basic research." This type of application-based research "(...) follows a pragmatic model of policy consultancy" which presupposes "(...) open dialogue between social actors and researchers."

"When a scientific approach replaces empirical knowledge, then occupational practice would appear to be some sort of slave to science"

"In a society where the scientific approach enjoys high public regard, those who transcend the current state of science are appreciated, powerful and effective. This is the case in research as in every other conceivable field."

"Enlightenment fosters emancipation, but what the emancipated do is unfortunately - or fortunately - beyond the control of the enlighteners."


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