A comparative consideration of career paths into middle management in the construction industry

Prof. **Gerhard Syben**

Professor of work and industrial sociology at the Hochschule Bremen (Bremen University of Applied Sciences), Germany, research into activity profiles, competence requirements and vocational training, focusing on the construction industry

Keywords

Comparative research, vocational training systems, further training, social effect, construction industry, supervisor

SUMMARY

The article is based on a comparative investigation of the training and further training paths into middle management on building sites in eleven countries in Europe. Using as its primary examples a comparison between Hungary, where vocational training takes place predominantly within the state education system, and Germany, where the dual system (short periods of further training and a predominantly experience-based vocational promotion path) dominates, the article shows that these different training paths also correspond to different forms of deployment and activities in workers' careers. Other countries included in the investigation confirm these findings. This suggests that in countries with a vocational training system like that in Germany, introducing changes – even if they were necessary in order to increase working efficiency – would entail a profound caesura in established social structures. In countries such as Hungary, in contrast, expanding the training paths could have a positive effect on skilled workers.

Introduction

In present-day comparative vocational training research, the focus is on the idiographic function, i.e. the view that vocational training systems can only be meaningfully compared if the way they are embedded in their respective social contexts is looked at (Cedefop; Tessaring, 1999, p. 242 [German version]; Lauterbach and Mitter, 1999, p. 247, footnote 8; Lauterbach, 2003, p. 107 et seq.; Georg, 2006, p. 187 and 189 et seq.). The intention of this article is to demonstrate, using the example of middle management on building sites in Europe, that the empirical analysis of activities and requirement profiles for which vocational training provides preparation, and the study of the social functions of vocational training within the scope of vocational training paths, can help us to understand better the ways in which vocational training systems differ.

To this end, a description will first be given of the subject matter of the example used here, i.e. the position and activities of middle management in construction and the different types of vocational training which provide preparation for working in middle management in construction in different countries in Europe.

The question of how and why such different vocational preparation makes it possible to carry out the same professional duties will then be discussed in detail on the basis of a comparison between Hungary and Germany. These two countries were chosen because they represent the diversity of the vocational training systems in Europe particularly well. To this end, the respective training paths into middle management in construction, empirical findings regarding requirements and activities on the building site and vocational training paths into middle management in construction will be considered. In order to enhance and supplement the arguments, information from a few other countries will also be drawn upon. In terms of theory, recourse will be had to the theory of the *effet sociétal*.

On this basis, an opportunity presents itself conclusively to consider some future prospects of vocational training in Europe. They arise from the questions of what the different systems can learn from one another, and to what extent, in order to improve vocational training and how they can best deal with adapting to the challenges of structural change in the construction sector.

Middle management in building production

If we initially consider the organisation of a building site without taking account of the many differentiating details which characterise the reality of construction everywhere, three levels can usually be found in the leadership structure. The management level bears overall technical and economic responsibility and is in charge of practical and deadline planning, for work preparation and for central decisions on conditions and implementing production (production methods, use of technology, manning level and costs). The middle management level is responsible for implementing production decisions and planning, in particular for day-to-day assignments and for attaining performance goals and central production norms (quantity, quality, deadline) and for compliance with safety provisions. Direct assignment of the working groups (usually consisting of from four to six workers) is managed by lower management.

Middle management is thus located at the interface between carrying out the construction work and preparatory planning. Its particular significance is based on a specific characteristic of building production. Both as a result of the single-item production system which is predominant in the construction sector and for technological reasons, in construction work in the majority of cases planning specifications have to be interpreted by employees in order to be implemented in production (cf. Syben, 1999, particularly pp. 139-146). This interpretation is scarcely noticeable if activities which recur on many occasions are concerned. It may take on a greater scope if, although well-known activities are involved, they have to be carried out under unfamiliar practical, spatial or temporal conditions. However, it may also place demanding requirements on the professional competence of the employees if innovative solutions or technological or architectural solutions which are difficult to implement are involved; the same applies if – as is unfortunately not infrequently the case – the planning details have not been constructively well thought out or the building plans have been inadequately formulated.

In any event, workers on a building site can never simply execute mechanically prescribed movements. They must always have developed a technical understanding of the task and defined it for themselves before they can carry it out. It is middle management in construction which plans, guides and controls this process. It is therefore the current view in all European countries that this leadership task will become more and more important as more stringent requirements are placed on the productivity of companies.

In principle, this general description applies to building sites

throughout Europe. ([1]) Therefore, qualification for these positions also everywhere has the objective of technological professional competence at the middle level, as well as the capabilities to organise working processes practically and temporally and to guide and lead the workers carrying them out such that the planned structure is built with the desired quality, within the prescribed timeframe and with the costs envisaged. However, the manner in which this competence is imparted differs in the individual countries within Europe.

Training for middle management in the construction industry in Europe

Training for positions in middle management in construction reflects the differences which are known from examination of the various vocational training systems in Europe. The essential difference is between systems which are primarily based on education and those which focus on training in businesses and (in the case of the construction industry) on building sites. A specific description follows here which is based on the example of the countries that were involved in the project, which primarily supplies the data on which this representation is based. ([2])

In the central and southern European countries of the Czech Republic, Hungary, Poland and Romania, preparation for taking on middle management positions on building sites takes place by way of training/education in the intermediate vocational education system specialising in construction. ([3]) Admission to this training course

([1]) It is not possible to go into the consequences of the extremely heterogeneous size structure of businesses in the construction sector and of building sites in further detail here. A description for Germany can be found in Syben, 1999, and Syben et al., 2005.

([2]) The findings on training and activities in middle management in the construction industry which are reviewed below form part of the results of the 'Eurosystem Bauweiterbildung' [Euro system further training for the construction industry] project which ran from autumn 2005 to autumn 2007 (cf. www.eurosystem-bau.eu). The countries involved were Denmark, Germany, Italy, the Netherlands, Austria, Poland, Romania, Sweden, the Czech Republic and Hungary, and also Switzerland at times. The objective was to develop joint modules for vocational training of middle management in the construction industry in Europe. In order to determine the fundamental principles, surveys were carried out in all the countries into the activities of middle management in construction and the training paths which lead to positions in middle management in construction. This investigative part has been completed since May 2006. The people responsible for it were Edith Gross and Gerhard Syben of the BAQ [Employment, Work & Qualification] Research Institute, Bremen.

([3]) This form of vocational training is also to be found in other countries such as France and Finland, but they were not involved in this project.

generally requires successful attendance of upper secondary education. In the German-speaking countries (Austria, Germany, Switzerland), preparation for middle management positions in construction takes place by means of further training lasting from three to six months. ([4]) Persons admitted to this training course have usually already accumulated several years of practical experience on building sites and have completed their initial vocational training within the dual system of education and training; ([5]) their previous school education has usually finished at intermediate secondary level.

Denmark cannot be categorised into this scheme. There, formal further training for positions in middle management in construction exists only for so-called 'authorised branches of trade' for which workers must hold a particular accreditation (e.g. electrical installation). It is true that further training is available specifically for management positions on building sites, but attendance is not compulsory.

Sweden and the Netherlands occupy an intermediate position. In Sweden, there are two possible ways of preparing for middle management positions in construction; both of them take about two years to complete. In a similar manner to the system in the German-speaking countries, it is possible to complete further training on the basis of 'personal planning' in parallel with one's professional activities; this builds on initial vocational training and consists of one third theoretical work to two thirds practical work. For some time it has also been possible, as in the countries with an educational system of vocational training, to complete so-called 'qualified vocational training', which consists of around three quarters theoretical training to one quarter practical training. Both paths require the worker to have attended upper secondary education, into which it is possible to integrate vocationally oriented subject matter and subject matter providing a vocational qualification. In the Netherlands, in order to take on a middle management position in construction the worker must have successfully passed stages 3 and 4 of the educational system. For each of these stages, an educational apprenticeship path and an apprenticeship path within businesses exist in parallel. On the educational apprenticeship path, transfer to stage 3 requires the

([4]) This type of training must also be stated to include the Italian partner from the Bolzano region; this region has adopted the German system of vocational training in its entirety, but is of course not representative of Italy in this respect.

([5]) The relevant peculiarity of the dual system of education and training is the high proportion of training within the business and under the responsibility of the business, as well as the significance accorded to building experience by participating in the company's working processes.

worker to have attended upper secondary education. This is equivalent to the course of education in the countries with an educationally based vocational training system. On the apprenticeship path within businesses, the worker enters stage 2 after completing intermediate secondary education. From there, it is possible to transfer to the higher stages step by step. Since training on the apprenticeship path within businesses takes place predominantly in the business, this form of vocational training resembles the system of apprenticeships within businesses in the German-speaking countries.

The function of idiography when comparing systems of vocational training

In a synthesis report published as long ago as 1999 on the status, at that time, of vocational training research in Europe, Cedefop pointed out that in order to compare vocational training systems it is necessary to have a broad prior understanding of the different historical and sociological contexts of different cultures and that context-related conditions such as the labour market, social legislation and the economic structure must also be included (Cedefop; Tessaring, 1999, p. 238 [German version]). Consequently, vocational training systems must be considered to be social organisations which are embedded in a national, i.e. social and cultural, context (Lauterbach, 2003, p. 143). With respect to comparative vocational training research, it follows that differences between the vocational training systems cannot be explained by comparing individual elements of these systems, but instead only by demonstrating the peculiarities of the respective societies in which they are embedded and their relationships within the scope of their respective social context (Georg, 2005, p. 188).

Thus, to be able to understand why the vocational training for positions which are identical in form in two countries is organised very differently, it is necessary to analyse, for each country, the relationships between the system of vocational training and the system of occupations, business labour organisations and social remuneration hierarchies and similar factors. As the attempt succeeds in reconstructing the social constellations and respective historical and socio-cultural context in which a system of vocational training is to be found, it also becomes clear why it best fulfils the function of reproducing the work capacity for this context in this way and not differently: *'Gegenstand des Vergleichs sind also nicht die einzelnen Phänomene der Berufsbildung selbst, sondern deren Zusammen-*

hang mit Phänomenen anderer gesellschaftlicher Bereiche' [The subject of the comparison is thus not the individual phenomena of vocational training itself, but rather their connection to phenomena in other social areas] (Georg, 2005, p. 188).

Bringing out these characteristics of a system of vocational training and demonstrating the links to other social partial systems and the overall social context is the particular achievement of the idiographic approach in a transnational comparison of vocational training systems. It is only by demonstrating the function of the vocational training system in its social context of reproduction of work capacity that its 'meaning' and its specific structural features in each case are explained (Georg, 2005, p. 189).

However, given the temporal and financial conditions of the project in which the findings which are described in this article were developed, a comprehensive idiographic work-up of the social context of the vocational training systems considered was not possible. Therefore, only two social context variables are considered here: the operational activities of middle management in the construction industry and the vocational paths leading into positions in middle management in construction. It is demonstrated, however, that these two variables must be given their due weight in the attempt to understand different forms of vocational training systems.

Data acquisition and survey methods

Analysis of occupational activities

The analysis of occupational activities is generally regarded as an important precondition for the determination of requirements for the vocational qualification and vocational training of employees ([6]) (cf. Pätzold et al., 2007; Clement et al., 2006; Bullinger, 2006; Cedefop; Schmidt et al., 2005; Mulder et al., 2005; Rauner, 2004; Bullinger et al., 2003; Hasler et al., 2002; Hilbert et al., 2002; Schömann, 2001, Cedefop; Sellin, 2001, Dostal and Kupka, 2001; Syben, 1996; Breunig, 1993; Gastrock, 1984; Hartung et al., 1981; Teichler, 1979; Grünewald, 1979; Weißbach, 1975; Joint authors, 1974). The empirical survey of vocational activities in the countries included here was based on extensive preliminary work from a project, carried out in Germany, to remodel occupations in middle manage-

([6]) In Germany, the term '*Berufs- und Qualifikationsforschung*' ['occupational and qualification research'] is usually used for these training-related works. 'Activity analysis ('*Tätigkeitsanalyse*') tends to be mentioned when the preparation of work structuring and wage calculation is concerned. However, this is not formal usage and the boundaries are blurred.

ment in construction (cf. Syben et al., 2005). The approach taken there (cf. ibid., particularly pp. 127-139 and 227-247) was based on the long-established view in qualification research that required qualifications cannot be simply derived from empirically determined activities (cf. Ekardt, 1979; Offe, 1975). Therefore, while the results of the empirical analysis of activities constituted an important point of reference in order to determine qualifications, in the process of defining the contents and forms of the proposed further training model they were supplemented by findings from occupational/pedagogical theory development and normative settings in training policy.

In accordance with the status of qualification research, qualitative methods were used (outline interviews with open questions) and questions were asked of different people (position holders, their superiors, human resources managers, training managers, company managers, experts serving a number of companies). This made it possible to balance out distortions which could have arisen as a result of one-sided perceptions of respondents. The companies included in the survey were chosen such that the most important structural parameters in the sector (branch of trade and company size) and thus the essential factors which influence the specific manifestation of the activity of the group of people investigated were controlled. At the end, material-rich, subtly differentiated and empirically assured descriptions of the occupational activities of middle managers in construction were available. They include the dimensions of 'mastery and use of construction techniques', 'organisation of the construction process' and 'personnel management' and take account of current technological, organisational and social developments in the construction sector and the construction business (cf. Syben et al., 2005, pp. 139 to 225). These results were examined with respect to their generalisability in discussions with experts serving a number of firms. Their generalisability is also proved by the fact that they currently constitute the basis for the official process for reforming further training to become middle managers in construction in Germany.

These descriptions were used in the international comparative project, in which there was no scope for independent method development, in order to construct the investigative instrument. A survey form containing predominantly closed questions was prepared on which it was possible to record activities in middle management in the construction industry at a moderate level of complexity (examples: 'calculate quantities of concrete required', 'be aware of environmental protection regulations and ensure compliance', 'carry out sequence planning'). A detailed grid of categories which had already been checked was thus available. This grid made it possible

to determine, in a largely standardised version, completely and at the same time in a finely delimited manner with respect to the activities of other employees on building sites, which activities an employee at middle management level in construction carries out in a country, and which he does not. Moreover, as a result of a few open questions it was possible to supplement the answers, although this possibility was scarcely used.

The surveys regarding the activities were carried out in all the countries as interviews of operational experts (supervisors, human resources managers) and of employees who occupy positions in middle management in the construction industry. In order to ensure that the results could be compared, in all the countries the companies selected for the surveys operate in the structural engineering sector and have building sites at which usually at least 20 and not significantly more than 100 workers have to be supervised. As a result of the narrow timeframe and particularly the narrow financial scope, it was only possible to carry out the surveys in two companies in each country, and in some cases even only in one company; they thus possessed the character of individual case studies (cf. Süßmann, 2007; Borchardt and Göthlich, 2006; Goode and Hatt, 1956). Thus, the survey is naturally not representative in the statistical sense. However, the cases were chosen in such a way that they corresponded to a typical construction company in the category described. Methodologically, they thus represent all the important features of the universal set of construction companies of the aforementioned type in the respective country. In other words, in principle, activities in middle management in the construction industry in this type of company have the appearance and form determined in this survey.

In some countries (Denmark, Italy, Austria, Sweden, Switzerland), the surveys were carried out by experts from the relevant project partners; in the other countries (the Netherlands, Poland, Romania, the Czech Republic, Hungary) they were carried out by the investigation managers in conjunction with the relevant experts. For Germany, recourse was had to the substantial findings from the aforementioned project which had already been completed. All the questionnaires were evaluated by the investigation managers; the results were presented, discussed and jointly interpreted at a meeting with the experts from all the countries involved. In view of the small number of cases, this check of the results by the experts to determine their validity, reliability and generalisability is to be accorded very great importance. However, since they were without exception declared experts with a well-founded and broad knowledge of the activities carried out on building sites in the respective countries, it is ensured

that the relevant results are generally valid for activities in middle management in the construction industry in the individual countries. ([7]) Methodologically, moreover, this combines the benefits of a survey method in which all countries have been investigated by people from a single country, i.e. from the same sociocultural point of view, with the method in which each country is investigated by an autochtonous person, i.e. from a specific point of view in each case (cf. Niebuhr, 1991, p. 212).

The results for each country were summarised in a separate verbal description of the typical activity pattern in middle management in the construction industry. These country-specific descriptions formed the basis for comparison of the fields of responsibility and activities in middle management in construction.

Analysis of occupational career paths

The surveys on the training paths and usual occupational careers followed by employees to be able to carry out functions in middle management in the construction industry were executed in several waves. Firstly, using a standardised questionnaire, basic information regarding training for middle management in construction was collected in all the countries involved in the project. On the basis of this and of supplementary general material about the vocational training systems in the countries involved, ([8]) a schematic description of the occupational training and career path into middle management that is specific to the construction industry was produced for each country. Additionally, in conjunction with the experts from the countries concerned, an attempt was made to make the existing training scope comparable by calculating volumes of hours for individual training paths. The schemes were checked jointly with the experts from the individual countries (particularly when for linguistic reasons it was impossible for the investigation managers to evaluate existing information on their own) and corrected where necessary.

Finally, all the information was summarised for each country in a specific verbal description of the typical training and career path into middle management in the construction industry. These country-specific descriptions formed the basis for comparison of the different training and career paths.

([7]) From a methodological standpoint, of course, the results in any case, like scientific results generally, have the character of a hypothesis which must be proved by further investigations. However, this would also hold true in the case of a broader empirical basis.

([8]) Descriptions of the systems of general and vocational training: www.eurydice.org/page/portal/eurydice; thematic overviews and analyses: www.trainingvillage.gr/etv/information_resources/national/vet

Training for middle management in the construction industry in Hungary and Germany

Hungary and Germany were selected for closer consideration. In Hungary, vocational training is the responsibility of the public education system; in Germany, it is to a large extent the responsibility of the business sector. The differences are therefore particularly pronounced, and so this comparison corresponds to the methodical procedure of the 'most-different-system designs' (Georg, 2005, p. 188). Recourse will be had to information from other countries for supplementary purposes on individual points.

Training for middle managers in the construction industry in Hungary

In Hungary, training for positions in middle management in construction takes place in the intermediate education sector specialising in construction. The usual path to this training is via a specialised intermediate school. Education at this school follows that at an eight-year primary school and lasts for four years. Education at the specialised intermediate school thus ends, after twelve years at school, with the school leaving examination, and thus corresponds to the level of upper secondary education.

The first two years of training (school years 9 and 10) at the specialised intermediate school have a general curriculum. In the third and fourth years (school years 11 and 12), specialist subjects are offered along with an introduction to the chosen occupational area. Overall, more than seven tenths of the entire four years of education and training time is of a general nature, somewhat more than one tenth consists of introductory vocational subject matter, and a further tenth of work placements in companies. At specialised intermediate schools geared towards the construction industry, pupils sit the school leaving examination in three theoretical construction subjects (structural engineering and building organisation including business management subject matter as well as information technology and AutoCAD) and one practical construction subject.

Education at a specialised intermediate school can be followed by training to become a technician. This lasts for two years, i.e. constitutes school years 13 and 14. This form of training for positions in middle management in Hungary provides a paradigm for the countries in Europe in which vocational training takes place within the state education system. While a student who has taken the school leaving

examination at a grammar school in Hungary is also entitled to train to become a technician, this choice is made only infrequently.

Training to become a technician comprises approximately 1 800 hours of instruction plus around 750 hours of practical training in the training workshop and a work placement in a firm, i.e. a total of 2 550 hours. The training focuses on theoretical instruction in technical construction subjects (surveying, technical drawing, strength of materials, technology, construction machinery, building materials and other subjects) and the organisation of building sites; together, these aspects make up almost 40 % of the overall training time. A further 6 % is allotted to training in electronic data processing applications. Practical training components make up almost 30 % of the overall training time and predominantly take place in the college's own training workshops, but also include a work placement lasting around four weeks (160 hours) at a building firm. Just under 20 % of the training components have general contents, including foreign languages and sport.

In principle, young people who have completed the training to become a technician in the construction sector have two different possible vocational paths. They can gain employment as technicians in an office (at a construction firm or planning office) and work there predominantly as draughtsmen and design engineers, or they can aspire to the position of *művezető* in construction firms; this position is entirely in accordance with the activity of middle management in construction which was described in the introduction.

Even if qualified technicians aspire to work on building sites, they usually begin their professional lives working for a construction company as technicians in the office. As a result of the technical orientation of their training, they can find their bearings most quickly in this activity. In this phase, they are primarily involved in preparing the building site and performing follow-up work on the building site (e.g. work preparation, invoice verification, ordering materials, calculating wages). In this way, they first become familiar with the building site analytically. Initially, this work takes up about 70 % of their working hours and is largely carried out using a PC. In their remaining hours, they acquire practical experience by being assigned to work as 'apprentices' for the position of *művezető* on the building site. They work alongside an experienced *művezető* on the site, receiving on-the-job training in order to become familiar with the practical side of the operations on the building site of which they were already aware in terms of symbolic illustration and analytical permeation from their office work. Over the course of time, the relationship between the office and building site gradually shifts in favour of a larger

proportion of work on the building site. After approximately two to three years of vocational experience, a technician of this type can work as an independent *művezető*.

Most technicians regard the changeover to work as a *művezető* on the building site as a promotion. However, it is also possible for a technician to remain in the office in a technician's position. From the company's point of view, it is easier to recruit technicians for office work than it is to recruit *művezető* for the building site.

Further training to become a middle manager in the construction industry in Germany

In Germany, the path into middle management in the construction industry always involves proving one's worth on a building site. Future middle managers are trained skilled workers who first attracted attention in their execution of construction work as a result of their competence and commitment, and who then take on small leadership tasks in positions at lower management level and later also at middle management level. Their scope and difficulty are increased step by step and dealing with them serves simultaneously to verify whether they are suitable for management activities.

This form of qualification is supported by training courses which are either attended in parallel with work or for which occupational activities (but rarely the employment relationship) are interrupted. Since these training courses run entirely separately from vocational training to become a skilled worker, they belong to the field of further training [*Weiterbildung*]. ([9])

There are different training courses according to the different levels of the building site hierarchy. Here, only further training to become a *Polier* [site foreman] will be considered, i.e. the position on a building site which entirely corresponds to the description given in the introduction and which is comparable to the position of *művezető* in Hungary. Training courses which prepare workers for the examination to become a *Polier* are usually offered by training centres which are usually supported by building industry associations. Candidates sit the examination before a *Handwerkskammer* [chamber of crafts] or an *Industrie- und Handelskammer* [chamber of trade and

([9]) In German, there is a linguistic distinction between *Fortbildung* and *Weiterbildung* (both of which mean 'further training'). *Fortbildung* refers to training courses which are geared towards promotion within the hierarchy of occupational positions. *Weiterbildung* refers to all training courses which serve to adapt or expand competence but do not result in promotion. The training courses for promotion into middle management in the construction industry therefore constitute '*Fortbildung*'. However, other countries do not have a term which equates to this linguistic usage, and so this article uses only the term '*Weiterbildung*' which is in common use in Europe.

industry]; the examination is governed by state regulations. ([10])

Authorisation to sit the examination requires candidates to have passed the skilled worker's examination in a construction occupation and to have at least two years' vocational experience in a building firm. Applicants who have not passed a skilled worker's examination may also be admitted to the examination, but must have at least six years of vocational experience in a construction firm. This too demonstrates the high level of significance of professional experience for promotion to become a *Polier.* Nowadays, however, participants in training courses which prepare for the examination to become a *Polier* usually have to have been trained to become a skilled worker as well as possessing occupational experience.

The training courses providing preparation for the examination to become a *Polier* usually have a scope of 640 hours. Of these, 140 hours are allotted to acquisition of the capability to train on the building site within the scope of the German system of training skilled workers within companies. The remaining 500 hours consist exclusively of theoretical training aspects and correspond to around 14 or 15 weeks of full-time instruction. Approximately 50 % of this is allotted to specialised construction subject matter, one third to organisation and planning and around 15 % to human resources management.

Young people who complete this training course are often assigned to work alongside an experienced *Polier* for a time before they are able to take on a position in middle management in construction on their own responsibility. However, in small companies it can also be the case that a worker has exercised the function of *Polier* for several years before completing the *Polier* training course.

Comparison of vocational training for middle management positions in construction in Hungary and Germany

First of all, some central elements of vocational training for middle management positions in the construction industry in Hungary and in Germany will be contrasted. Such a pure comparison without considering the different social contexts is referred to in comparative vocational training research as a juxtaposition and is considered to be a preliminary stage of an idiographic comparison (Cedefop; Tessaring, 1999, p. 241 [German version]; Lauterbach, 2003, p. 183 et seq.). At this juncture, it appears meaningful to select the elements 'educational basis', 'construction theory training' and 'acquisition of occupational experience' for such a juxtaposition.

([10]) On the basis of these regulations, someone who has passed the examination may call himself '*Geprüfter Polier'* [certified site foreman].

- In formal terms, in Hungary the educational basis comprises twelve school years, i.e. it ends on completion of upper secondary education. In Germany, it usually includes nine or ten years, which corresponds to completion of intermediate secondary education. However, this comparison by itself is not complete if no consideration is given to the fact that in Hungary school years 11 and 12 at the specialised intermediate school already contain a strong element of vocational education. In Germany, on the other hand, school attendance for nine or ten years up to the end of intermediate secondary education is followed by an apprenticeship which lasts three years and, as well as practical training components within a company and a training centre, also provides for around 25 % of the training time at vocational college to be spent on theoretical and practical subject matter (Syben, 2000, p. 23).
- Accordingly, construction theory training begins in Hungary in the 11th school year, and in Germany in the first year of the apprenticeship within a company, specifically in the accompanying instruction at vocational college. By the time a worker has finished vocational training for a position in middle management in the construction industry in Hungary, he has completed around 1 800 hours of construction theory training; in Germany, the figure is around 1 400 hours. In order to be able to assess these figures correctly, however, consideration must be given to the fact that in Hungary just under three quarters of this construction theory training takes place at a level above upper secondary level, while in Germany two thirds is completed within upper secondary education.
- It is not possible to compare the candidates' occupational experience for a position in middle management in the construction industry in mathematical terms, because in both countries it may differ a great deal in individual cases. Generally, however, it ought to last considerably longer in Germany than in Hungary, even if only the time completed following the specialised intermediate school (in Hungary) and following the apprenticeship within a company (in Germany) is taken into account. Here, too, in order to make a complete assessment, consideration must be given to the fact that this extension of operational experience takes place in Hungary on the basis of completed formal education and the professional status achieved in middle management, while in Germany it is usually the prerequisite for promotion to middle management level.

Thus, it can be seen that, while juxtaposition as a pure comparison of data and information from different social contexts can provide an impression of the different nature of vocational training for positions in middle management in the construction industry in two countries, it cannot actually describe this different nature and is even less capable of explaining it. Therefore, it is agreed within comparative vocational education and training research that to do this an analysis of variables in the vocational and social context and their connection to the elements of vocational training which have been considered is required.

Activities in middle management in the construction industry in Hungary and Germany

Activities in middle management in the construction industry in Hungary

To be able to describe the activities of middle managers in the construction industry in Hungary and Germany in a comparative manner, classification into the fields of responsibility of preparatory planning, organisation of the execution of the work and monitoring and documentation of the execution has been undertaken. This classification was developed within the scope of the research in Germany which has already been mentioned (Syben et al., 2005, p. 139 et seq.) and makes possible consideration of the matter in a simultaneously detailed and structuring manner.

Preparation and planning of the building site

The *művezető* carries out practical planning and time planning for his assembly section; when drawing up construction schedules and operation charts he takes over specifications which the site manager has drawn up for the entire structure. He is responsible for work preparation, drawing up formwork plans, deciding on the selection of the construction equipment used, including the formwork material, and on the number of workers required and their qualifications as well as for the execution and monitoring of the building site facilities.

The elementary survey of the building site is carried out by surveyors, and the subsequent surveying work (e.g. setting up alignments, measurement of axes, checking elevations) is completed by the *művezető* . Surveying duties during the working process which serve to check the quality of the components produced (perpen-

dicularity, horizontalness, levelling) is undertaken by the construction foreman. The *művezető* checks the results. The quantity survey ([11]) is a task undertaken by the *művezető*.

Organisation of the execution of the work

In the execution of the work, the *művezető* is primarily allocated tasks associated with arrangement of material, equipment and personnel and the practical organisation and organisation in terms of time of the working process and worker assignment. This includes drawing up daily plans, assigning and overseeing work by subcontractors, reorganising work if unforeseen events occur and ensuring a smooth transition to the following assembly sections. For the execution of work in his assembly section, the *művezető* bears overall responsibility for the assignment and performance of the workforce. In particular, his duties include dividing up workers for the individual work tasks, helping to solve problems in special cases, recognising and remedying defects in the execution of the work and motivating the workers. It is specifically expected that the *művezető* will evaluate his colleagues and train young apprentices for the position of *művezető* .

However, direct leadership, direction and supervision of the workers, as well as direct implementation of the technical construction processes, are the responsibility of the construction foreman, i.e. the management level below the *művezető*.

Monitoring and documentation

The *művezető* checks the quality of the material delivered to the building site. He monitors compliance with deadlines and the quality of the work carried out; the construction foreman supports him in this work. He maintains the construction log, the concreting log, the workers' timesheets and the material lists.

Furthermore, the *művezető* is responsible for the circumstances which should result in optimisation of the costs (compliance with deadlines, duration of use of equipment, optimisation of material consumption, avoidance of idle times). However, specific consideration of the building site's costs is the responsibility of the construction supervisor, not of the *művezető* .

Additionally, the *művezető* must ensure compliance with the provisions on safety at work, accident prevention and environmental protection.

([11]) The term 'quantity survey' refers to the survey of the finished structure. It forms the basis for acceptance and invoicing.

Activities in middle management in the construction industry in Germany

Preparation and planning of the building site

Preparation of the building site in terms of planning is the task of the work preparation department (office) and/or of the site manager. This primarily concerns practical planning and time planning for the building site and building site facilities as well as work preparation. The same thing applies to decisions on the technology used (machinery, equipment, formwork system) and the building materials used (if these have not been specified by the customer). Subcontractors are chosen and engaged by the site manager or purchasing department. The decision regarding the number and qualifications of the workers to be assigned can be made by the site manager or the *Polier*.

The *Polier* becomes involved in this work as the planning progresses; he is expected to check the feasibility of the planning. It is the *Polier*'s task to set up the building site facilities.

The basic surveying work is carried out by the surveying office. Additional surveying work is carried out by the *Polier* on the basis of the figures determined by the surveyors. Surveying work during the working process that serves to check the quality of the components produced is carried out by the *Polier* himself or by the construction foreman under his responsibility. In principle, the site manager carries out the quantity survey; the *Polier* only takes on this duty in exceptional cases.

Organisation of the execution of the work

In the execution of the work, the *Polier* is responsible for implementing the planned logistics, i.e. he is primarily responsible for the disposal of material, equipment and personnel and for the practical organisation and time organisation of the working process and the assignment of the workforce. This involves dividing up the workers and providing them with instructions, drawing up daily plans, reorganising work if unforeseen events occur and coordinating the assembly sections. The *Polier* is additionally responsible for the direct application of the technical construction procedures and for monitoring the execution of the work. The *Polier* also allocates work to the subcontractors and examines the results.

The *Polier* bears overall responsibility for the assignment and output of the workers, but the construction foremen provide direct guidance (direction and supervision). In particular, it is the *Polier*'s duty to undertake daily work planning and divide up the workers for the individual

work tasks, to help to solve problems in special cases, to monitor the execution of the work, to recognise and remedy defects in the execution of the work and to motivate the workers. Providing support for colleagues and recognising their potential (as the new generation of *Poliere*) are in principle regarded as the tasks of the *Polier*; he is also responsible for training up-and-coming managers (construction foremen and the new generation of *Poliere*). In any event, the *Polier* is responsible for the training of young workers which takes place on the building site within the framework of the dual system.

Monitoring and documentation

The *Polier* checks the quality of the material delivered to the building site. He monitors compliance with deadlines and the quality of the work carried out. He is responsible for compliance with the provisions relating to heat protection, moisture protection, noise protection and fire protection. The *Polier* maintains the construction log, the concreting log, the workers' timesheets and the material lists.

The *Polier* bears joint responsibility for ensuring that the building site costs are minimised and that the construction schedule is observed. To this end, he must see to it that materials are used economically, that the time during which equipment remains on site is minimised, and that idle times in the workflow are avoided.

It is the responsibility of the *Polier* to ensure compliance with the provisions on safety at work, accident prevention and environmental protection.

A comparison of activities in middle management in the construction industry

A comparative consideration reveals that to a large extent the *művezető* in Hungary and *Polier* in Germany carry out the same activities. The differences appear to be relatively small. However, if, in accordance with the requirement of the idiographic method, a relationship is constructed between the form of the activity and the form of the vocational training for each country, characteristic differences with wide-ranging consequences are revealed.

The activities of the *művezető* in Hungary and *Polier* in Germany are obviously similar, particularly with respect to setting up the building site facilities, organising the execution of the work and in the practical and temporal disposal of resources for the construction process. Additionally, both of them are likewise responsible for the quality of the execution of the work, for compliance with the deadlines and cost limits and for documentation of the operations on the building site.

In contrast, there are differences in the nature of involvement in preparatory planning for a construction project. In Germany, the *Polier* takes over the completed planning and preparatory work from the site manager or the work preparation office. In Hungary, the *művezető* receives framework specifications from the site manager, who is responsible for all the construction work, within which he independently undertakes practical and temporal planning for part of the structure. Planning duties of this type are not carried out by a *Polier* in Germany. While the *Polier* undertakes practical and temporal preparations for the execution of the work for the next 14 days within the framework of the predetermined plans, the primary expectation of him is that he will check the planning undertaken by the engineers in the office with respect to its feasibility on the building site and will implement it in practice.

This subtle differentiation in activities is entirely in accordance with the difference in the form of training provided in the two countries. In Hungary, the *művezető* 's training is primarily geared towards the acquisition of formal knowledge and analytical capabilities which enable him to carry out practical and temporal planning activities and preparatory work. While the *Polier* in Germany also learns these skills to a certain extent, his competence is focused on the application of know-how acquired during his work history. This interpretation is supported by two further findings. The *művezető* makes the decision regarding the construction equipment to be used and the material to be employed for the formwork, and he undertakes the quantity survey. A *Polier* never undertakes these activities, or only exceptionally. They belong to the area of operations of the site manager, who is usually a civil engineer.

The same result is reached if the division of work on building sites in the Czech Republic is considered. There, too, in a similar manner to the training of the *művezető* in Hungary, the training of the *mistr*, the position which corresponds to the position in middle management in the construction industry which is defined here, is set up on a technical basis and geared towards the acquisition of formal knowledge and analytical capabilities (it is of course supplemented by practical experience in that case too). The division of work on the building site reveals the same pattern as in Hungary: on Czech building sites, the *mistr* carries out planning duties and work preparation duties to a considerably greater extent than the *Polier* in Germany. In one of the companies investigated, which was in exclusively Czech ownership and had Czech management, this form of work division was even more pronounced than in another whose management style revealed traces of a German influence because

it was a subsidiary of a German construction group.

In this connection, it is particularly interesting to analyse the division of work on building sites in the Netherlands and the activities of the *uitvoerders,* the corresponding position in middle management in the construction industry, since there is obviously no uniform 'Dutch model', but instead the work carried out by an *uitvoerder* depends on his training background. While an *uitvoerder* who completed his training on the educational training path or at a college of higher education is much more likely to be assigned difficult technical planning tasks, *uitvoerders* who trained within companies tend to focus on direction and supervision of the execution of the work on the building site.

The form of the division of work in the countries considered comparatively here thus corresponds to the type of vocational training. The *művezető* (like the *mistr* and an *uitvoerder* who trained on the educational training path) has completed training to be a technician which is much more akin in type to the training of an engineer than to that of a worker. In order to carry out middle management activities on the building site, he needs supplementary practical experience which is acquired in the appropriate phases of his occupational career. However, his activities also include planning work for which he is trained and which is in accordance with his occupational role and his occupational self-image. In contrast, the *Polier* in Germany (as in Austria and as in the case of an *uitvoerder* who trained within a company) acquires his professional competence chiefly as a result of practical experience; formal knowledge and analytical skills are imparted to a much smaller extent. Consequently, he is also less concerned with planning activities; instead, he is primarily expected to organise the execution of work on the building site – again, this is in accordance with his occupational experience and his occupational self-image.

In relation to these differences, which can be determined, as it were, with regard to the division of work in the construction process, there are, however, complementary differences: while the *Polier* in Germany is actually the direct superior of the workers as the supervisor on the building site, the *művezető* in Hungary generally does not manage the workers directly but instead issues instructions to the construction foremen who transform his requirements into instructions to the workers. This is a result also of the form of the training and its integration into social circumstances. The *Polier* in Germany and the construction foreman in Hungary (as well as an *uitvoerder* who trained within a company in the Netherlands) have moved into the management position from a working-class position.

In contrast, the *művezető* , the *mistr* and an *uitvoerder* who trained on the educational training path have passed through a form of vocational training which has also, as it were, moved them past the working class into a middle management position.

Occupational career paths into middle management in the construction industry in Hungary and Germany

This specific character of vocational training and occupational activity naturally recalls the theory of the *effet sociétal* which was developed in the 1970s by Burkart Lutz, Marc Maurice and others (Lutz, 1979; Maurice et. al., 1982; cf. also Maurice, 2000). In a comparative study in companies with identical or very similar production technologies and products, they found very different forms of activities, manning levels and operational hierarchies; they were able to explain these differences on the basis of complex interdependence between work organisation and vocational training. If we consider the relationship between the form of vocational training and occupational career patterns, we will find a similar effect of the social context.

The *művezető* in Hungary has completed a specialised intermediate school, reached the level of upper secondary education and then completed training to become a technician. He or she has also simultaneously made the decision not to attend vocational college, where the three-year period of training to become a skilled worker takes place, after the specialised intermediate school. It is his/her qualifications, but also his status as someone who has completed training to become a technician, which provide him/her with access to positions in middle management in the construction industry. Taking on a position on a building site naturally requires the formal/analytical competence acquired during training to be supplemented by practical experience. However, he or she acquires this practical experience on the basis of his or her status as a technician. It is the form of the training which gives him this occupational and social status and which opens up these vocational opportunities.

In Germany, the position of a *Polier* represents occupational advancement. Following intermediate secondary education, a *Polier* have first of all completed training to become a skilled worker. They have worked in this occupation and have been recommended for a middle management position and function primarily as a result of their practical ability. Formal knowledge and analytical capabilities

are hardly considered unimportant for this position, but are clearly viewed as subordinate to competence based on occupational experience. Here, too, formal knowledge is not acquired on a continuous training path, but rather by means of further training which is undertaken several years after completion of the training to become a skilled worker, and is significantly smaller in scope.

Participation in further training to become a *Polier* presupposes that the worker wishes to advance into middle management in the construction industry. It is also only meaningful if the worker has this occupational goal, since it does not open up any other career options. In contrast, completing technicians' college in Hungary initially opens up different career options; *művezető* is only one of these, and not the last option.

Technicians in Hungary can make use of their training, their type of knowledge and competence and their occupational understanding of their role to transfer to university education, and do so not infrequently. Moreover, young graduates of colleges of higher education begin their careers working in the position of *művezető*. They thus at the same time have the opportunity to rise to the position of site manager at a later point in time. In addition, workers who have completed the training to become a technician in Hungary also have the opportunity to become technical inspectors. To do so, once they have accumulated ten years of occupational experience, they can complete further training at a university which covers the financial, legal and technical aspects of construction and of quality control and ends with an examination.

No comparable further training is offered to *Poliere* in Germany, and nor would it be tailored to their previous competence profile. Moreover, in Germany *Poliere* only complete qualifications to become civil engineers in exceptional cases. While it is true that in small and medium-sized enterprises a *Polier* may deal with site management tasks, this happens precisely because of his occupational know-how and his practical occupational competence as a *Polier*, not because the competence and knowledge are similar to those of a civil engineer. *Poliere* only exceptionally succeed in entering university.

In Germany, the training, form of knowledge and competence and occupational self-image mean that the *Polier* is singled out as a worker who is a member of middle management in the construction industry and who, although he/she is familiar with the engineers' world, is separated from it by a clear dividing line. Conversely, someone who has completed the training to become a construction technician or civil engineer also does not take on the position and role of a *Polier*. Even a student who, for some reason, fails to finish his engineering

degree course (if he/she does not turn his back on the construction sector in disappointment) as a rule becomes a construction technician, not a *Polier*. The superficial argument for this fact is that the formal/analytical qualification possessed by a technician or engineer does not, by its nature, make him/her capable of carrying out the duties of a *Polier* on a building site. However, at least as much significance should be attached to the fact that the position of *Polier* is the promotion which lies at the end of a skilled worker's career. Consequently, the position of *Polier* is a position located in the social context of blue-collar professions. ([12])

Conversely, this means that the position of *Polier* is an attainable occupational and social option for those who have completed training to become a skilled worker. It is true that a young skilled worker likewise has the option of changing over to train as a civil engineer, but this is an alternative move, not a sequential move. He would have to make the decision before starting out on the path to becoming a *Polier,* or he would have to revise the decisions which led him onto the path to becoming a *Polier*. For skilled construction workers, the path leads towards becoming a *Polier* and ends there.

On the other hand, a worker who completes skilled worker's training in Hungary has as good as no chance of being promoted into the position of *művezető*. While he/she fulfils the formal requirements for transferring to technician's training, this happens as rarely as a German *Polier* making the transition to university. The reason given by companies is that the worker lacks the competence to supervise other employees and to undertake the administrative work, i.e. precisely the formal and social requirements which form the basis for the occupational status of the technician in middle management in the construction industry. If a skilled worker in Hungary really wishes to obtain occupational promotion, he or she likewise faces a difficult choice, because this career sequence does not exist. He/she must leave his job as a worker and train to become a technician. He/she would thus have to (be able to) revise the decision he made when choosing the training course which had made him a skilled worker. Passing directly from being a skilled worker to being a *művezető* is just as unlikely as passing directly from being a *Polier* to being an engineer.

([12]) Even though, in accordance with social insurance law and the collective wage agreement, the *Polier* is considered to be a white-collar worker.

Prospects

Burkart Lutz pointed out the danger that merely identifying the consequences of the *effet sociétal* means that only the impossibility of comparing education systems and social contexts can be established (Lutz, 1991, p. 104 et seq.). This would make mutual learning difficult. In fact, taking the social context into account primarily and initially identifies what is impossible or in any event not readily possible.

It thus becomes clear that changes to the form of preparation for taking on positions in middle management in the construction industry in Germany – and likewise in other countries with a dual system of vocational training – could have serious consequences for the employees, the company and the sector. It is indisputable that the system used so far to provide vocational training for middle managers in the construction industry in Germany is in need of improvement (Syben et al., 2005, p. 12 et seq.). But the more closely vocational training were approximated to the type geared towards formal/analytical qualifications, the more the path to becoming a *Polier* would diverge from the current experienced-based route to promotion for qualified and motivated skilled workers. It is expected that this would have negative consequences for the attractiveness of the skilled worker occupations, career choices made by young people and the motivation to achieve among young skilled workers. They would be deprived of a route to social advancement on the path to proving their worth in their occupation. Certainly this would have consequences in terms of interest in the occupation and in terms of the ability of companies to attract efficient and motivated young people into blue-collar occupations in the construction sector.

However, if modernisation of vocational training for middle managers in the construction industry in Germany results in reinforcement of the formal/analytical type of competence, new possible ways of making the transition to additional training and employment opportunities can and must be created. This applies horizontally to activities at the same level that take place off the building site and vertically to promotion opportunities above the position of *Polier*.

In contrast, in Hungary (and in countries with a comparable training system), opening up opportunities, based on experience, for occupational advancement for skilled workers into middle management positions could have a positive effect on the attractiveness of construction occupations and young workers' motivation to succeed. To date, no such opportunity exists; creating a new opportunity

could increase the attractiveness of the construction occupations and young skilled workers' motivation to succeed. But it would then also be necessary to create new positions in middle management in construction for those who had completed further training. Otherwise, the change in vocational training would, as it were, go nowhere.

In any event, however, the idiographic comparison teaches us that we should be cautious in undertaking changes. Vocational training systems have not taken on their present form by accident, but rather as a consequence of a balance which has come into being with the production system and the social system of reproducing work capacity (Hall and Soskice, 2004; Maurice and Sorge, 2000). Since this relationship has existed for decades, dismantling this context will necessarily prove extremely difficult to execute. It may also have unforeseen negative consequences and unintended side effects.

Under certain circumstances, the Dutch practice of running an educational training path and a training path in parallel within companies is a pragmatic and intelligent way of creating structures which can react flexibly to the different interests and requirements of both employees and companies.

This is because new requirements arising from the employment system can also force changes in vocational training which can only be absorbed with difficulty by an evolved system. Therefore, structural change within the construction industry will lead to increasing technological and organisational requirements being placed upon structures and the construction process. This may well lead to the need for an increase in formal/analytical competence specifically among middle management in the construction industry. While countries in which middle managers in the construction industry already become qualified more through formal knowledge and analytical competences will presumably be able to adapt to this without great difficulty, the career path which is based on experience would come under pressure.

In Germany, some large construction companies already reacted to the proposals some time ago. Without restricting the experience-related further training undertaken by *Poliere,* they have additionally set up internal training paths for some positions in middle management which impart more formal/analytical competence than the conventional training to become a *Polier* but without it being necessary to aspire to the level of a civil engineer at a university.

Thus, the ameliorative function of comparing systems of vocational training can be combined intelligently with the idiographic function. Learning from one's neighbours would then not be a matter of blind

adaptation to alleged 'best practices' whose function and meaning have not been comprehended within their respective context of origin. Instead, it would be a matter of skilfully embedding new elements to strengthen and enrich vocational training within its own social context.

Bibliography

Joint authors (Löns, Rolf; Ott, Jutta; Pornschlegel, Hans; Rüger, Sigrid; Tillmann, Heinrich; Dörfer, Gerhard; Kühl, Jürgen; Mollwo, Ingrid; Stooß, Friedemann; Troll, Lothar; Ulrich, Erhard). 'Qualifikations- und Arbeitsanalyse', in: *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung*, 7th year (1974), 164-189.

Borchardt, A.; Göthlich, St. E. 'Erkenntnisgewinnung durch Fallstudien'. In: Albers, S., Klapper, D., Konradt, U., Walter, A., Wolf, J. (ed.): *Methodik der empirischen Forschung*, Wiesbaden, 2006, pp. 37-54.

Breunig, Christian. *Journalismus der 90er Jahre: Job-Profile, Einstieg, Karrierechancen*. Munich, 1993.

Bullinger, Hans-Jörg (ed.). *Qualifikationen im Wandel*. Bielefeld, 2006.

Bulliger, Hans-Jörg; Schmidt, Susanne Liane; Schömann, Klaus; Tessaring, Manfred (ed.). *Früherkennung von Qualifikationserfordernissen*. Bielefeld, 2003.

Cedefop; Schmidt, Susanne-Liane; Strietska-Ilina, Olga; Tessaring, Manfred; Dworschak, Bernd (ed.). *Ermittlung künftiger Qualifikationserfordernisse*. [*Identifying skill needs for the future*.] Cedefop Reference series 59. Luxembourg, 2005.

Cedefop; Sellin, Burkart. *Anticipation of Occupation and Qualification Trends in the EU*. Thessaloniki, 2001.

Cedefop; Tessaring, Manfred. *Ausbildung im gesellschaftlichen Wandel. Ein Bericht zum aktuellen Stand der Berufsbildungsforschung in Europa* (Synthesis report). [*Training for a changing society. A report on current vocational education and training research in Europe*.] Thessaloniki, 1999.

Clement, Ute; Le Mouillour, Isabelle; Walter, Matthias (ed.). *Standardisierung und Zertifizierung beruflicher Qualifikationen in Europa*. Bielefeld, 2006.

Dostal, Werner; Kupka, Peter (ed.). *Globalisierung, veränderte Arbeitsorganisation und Berufswandel. Beiträge 240 zur Arbeitsmarkt- und Berufsforschung*. Nuremberg, 2001.

Ekardt, Hanns-Peter. In Arbeitsorientierte Berufsforschung in hochschuldidaktischer Absicht. In: Teichler, Ulrich (ed.). *Hochschule und Beruf*. Frankfurt a. M./New York, 1979, pp. 84-112.

Gastrock, G. *Neue Ansätze der Berufs- und Qualifikationsforschung*. Bad Honnef, 1984.

Georg, Walter. Vergleichende Berufsbildungsforschung. In: Rauner, Felix (ed.). *Handbuch Berufsbildungsforschung*. Bielefeld, 2005, pp. 186-193.

Goode, William J.; Hatt, Paul K. Die Einzelfallstudie. In: König, René (ed.). *Beobachtung und Experiment in der Sozialforschung*. Cologne and Berlin, 1956, pp. 299-313.

Grünewald, Uwe (in collaboration with Wilhelm Degen). *Qualifikationsforschung und berufliche Bildung*. Berlin, 1979.

Hall, Peter A.; Soskice, David. *Varieties of Capitalism*. Oxford, 2004.

Hartung, Dirk; Nuthmann, Reinhard; Teichler, Ulrich. *Bildung und Beschäftigung*. [*Education and Employment*.] Munich, New York, London, Paris, 1981.

Hasler, Bernd; Herms, Olaf; Kleiner, Michael. *Curriculumentwicklung mittels berufswissenschaftlicher Qualifikationsforschung*. Bremen, 2002.

Hilbert, Christoph; Mytzek, Ralf in collaboration with Michael Neugart and Janine Leschke. *Strategische und methodische Ansatzpunkte zur Ermittlung des regionalen Qualifikationsbedarfs*. Wissenschaftszentrum Berlin, discussion paper FS I 02-211; Berlin, 2002.

Lauterbach, Uwe; Mitter, Wolfgang. Theory and Methodology of International Comparisons. In: Cedefop (ed.). *Vocational education and training – the European research field*. Background report, 1998, Volume II; Luxembourg, 1998, pp. 235-271.

Lauterbach, Uwe. *Vergleichende Berufsbildun*gsforschung. Baden-Baden, 2003.

Lutz, Burkart. Bildungssystem und Beschäftigungsstruktur in Deutschland und Frankreich – Zum Einfluß des Bildungssystems auf die Gestaltung betrieblicher Arbeitskräftestrukturen. In: Mendius, Hans-Gerhard (ed.). *Betrieb – Arbeitsmarkt – Qualifikation I*. Frankfurt am Main/Munich, 1976, pp. 83-151.

Lutz, Burkart. Die Grenzen des „effet sociétal" und die Notwendigkeit einer historischen Perspektive. In: Heidenreich, Martin; Schmidt, Gert (ed.). *International vergleichende Organisationsforschung*. Opladen, 1991, pp. 91-105.

Maurice, Marc; Sellier, François; Silvestre, Jean-Jacques. *Politique d'éducation et organisation industrielle en France et en Allemagne: essai d'analyse sociétale*. Paris, 1982.

Maurice, Marc. The paradoxon of societal analysis. A review of the past and prospects for the future. In: Maurice, Marc, Sorge, Arndt (ed.). *Embedding Organizations. Societal Analysis of Actors, Organizations and Socio-Economic Context*. Amsterdam and Philadelphia, 2000, pp. 13-36.

Maurice, Marc; Sorge, Arndt (ed.). *Embedding Organizations. Societal Analysis of Actors, Organizations and Socio-Economic Context*. Amsterdam and Philadelphia, 2000.

Mulder, Martin; Wesselink, Renate; Bruijstens, Hans Chr. J. Job profile research for the purchasing profession. In: *International Journal of Training and Development*, 2005 vol., pp. 185-204.

Niebuhr, Joachim. Produktinnovationen in Klein- und Mittelbetrieben des Maschinenbaus in Großbritannien und der Bundesrepublik Deutschland. In Heidenreich, Martin, Schmidt, Gert (ed.). *International vergleichende Organisationsforschung*. Opladen, 1991, pp. 211-221.

Offe, Claus. Bildungssystem, Beschäftigungssystem, Bildungspolitik – Ansätze zu einer gesamtgesellschaftlichen Funktionsbestimmung des Bildungssystems. In: Roth, H./Friedrich, D. (ed.). *Bildungsforschung. Probleme – Perspektiven – Prioritäten*. Volume I. *Gutachten und Studien der Bildungskommission*. 50. Stuttgart, 1975, pp. 217-252.

Pätzold, Günter; Busian, Anne; von der Burg, Julia. *Europäische Herausforderungen und Potenziale der Qualifikationsforschung in der beruflichen Bildung*. Paderborn, 2007.

Rauner, Felix. *Qualifikationsforschung und Curriculum: Analysieren und Gestalten beruflicher Arbeit und Bildung*. Bielefeld, 2004.

Schömann, Klaus (ed.). *Qualifikationen von morgen*. Bielefeld, 2001.

Süßmann, Johannes (ed.). *Fallstudien: Theorie – Geschichte – Methode*. Berlin, 2007.

Syben, Gerhard. Fachkraft oder Hilfskraft: Wieviel Qualifizierung braucht der Bauarbeiter? In: Bundesinstitut für Berufsbildung [Federal Institute for Vocational Education and Training] (ed.). *Berufliche Bildung – Kontinuität und Innovation. Dokumentation des 3. BIBB-Fachkongresses vom 16.-18. Oktober 1996 in Berlin*. Berlin, 1996, pp. 416-419.

Syben, Gerhard. *Die Baustelle der Bauwirtschaft. Unternehmensorganisation und Arbeitskräftepolitik auf dem Wege ins 21. Jahrhundert*. Berlin, 1999.

Syben, Gerhard. *Vergleich der Systeme der beruflichen Bildung in der Europäischen Bauwirtschaft*. Manuscript. Bremen and Brussels, 2000.

Syben, Gerhard; Gross, Edith; Kuhlmeier, Werner; Meyser, Johannes; Uhe, Ernst. *Weiterbildung als Innovationsfaktor*. Berlin, 2005.

Teichler, Ulrich (ed.). *Hochschule und Beruf. Problemlagen und Aufgaben der Forschung*. [*Higher Education and the Professions: Problems and Future Tasks of Research*.] Frankfurt a. M./New York, 1979.

Weißbach, Hans Jürgen. *Planungswissenschaft. Eine Analyse der Entwicklungsbedingungen und Entwicklungsformen der Arbeitsmarkt- und Berufsforschung in der Bundesrepublik Deutschland*. Gießen/Lollar, 1975.