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***Cross-company Learning Alliances in the Metal
and Electrical Industries and their impor-
tance for the Dual System of Vocational Edu-
cation and Training in Germany***

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**1. Trends in the world of work: permanent changes in the
production model and increasing shortage of skilled workers**

(1) In the world of work, three main processes of change with specific consequences for the German Dual System of Vocational Education and Training are visible in the last decades (Castells 1996; Lazonick 2004; Moldaschl et al. 2007; Schmierl et al. 2007):

Firstly, the German production model is subject to constant, increasingly short-term and intercultural changes. The rising demands require an enhanced need for qualified professionals who are able to deal with growing flexibility, constant pressure to come up with innovations, shorter product life cycles, growing global networking etc.

This change in the German production and innovation model, secondly, includes cycles of business reorganisation to the point of the complete restructuring of enterprises which often involves start-ups and spin-offs of small and medium-sized enterprises (SMEs), which make up the majority of German companies anyway.

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Thirdly, it is a recognised fact that the German industry is facing a large-scale *lack of skilled labour* in the very near future, a trend that is exacerbated by the demographic change. Industrial enterprises and in particular companies from sectors with a high proportion of skilled workers, a high level of innovation and strong export activities such as the metal and electrical industries will be up against a massive and increasing shortage of skilled labour in the years ahead.

(2) This problem does not only affect the recruitment of already trained skilled personnel but also that of school leavers for an initial vocational training in industry (Schmierl 2011; Voss-Dahm et al. 2011). Sometimes this *problem constellation* is still *cumulatively* exacerbated:

- This e.g. applies to small and medium-sized enterprises due to their supposedly lower attractiveness and job security;
- Furthermore it also applies to companies that due to economic fluctuations are not able to give trainees long-term training guarantees;
- It also applies to businesses that are located in certain labour market districts with unfavourable conditions or that are in stiff labour market competition with big concerns;
- and it applies to enterprises that are particularly affected by the demographic change.

(3) These changes meet the wellknown traditional way of producing professional occupations in Germany: the *German Dual System of Vocational Education and Training*. “Currently there exist 343 recognized training occupations. The 5 occupations most frequently chosen in 2008 by young men are car mechatronic, industrial mechatronic, management assistant, cook, electronics technician; and by women are management assistant, office administrator, sales assistant, hairdresser, medical assistant” (FMER 2009, p. 13, Bosch 2010; Brater 2010; Cortina et al. 2003; FMER 2004).

What constitutes this system is that “two partners share the responsibility for vocational education and training. [On the one hand, a] company concludes a training contract with a young trainee and assumes the responsibility for teaching the required training contents. The company organizes learning on an average of three or four days per week on the basis of a training plan, which forms part of the training contract concluded with the trainee” (FMER 2007, p. 7). On the other hand, “trainees attend part-time vocational school on one or two days per week, where they are mainly taught theoretical and practical knowledge

related to their occupation; in addition they attend classes on general subjects such as economic and social studies and foreign languages” (ibid., p. 11). Learning thus takes place at two sites and respectively on two levels.

In the company, “training is mainly provided at the workplace, that is, during work. This is the central point in which the German dual system differs from school-based training models of other countries: In-company training familiarizes the trainees with the technological and organizational aspects of the current work processes in companies” (ibid., p. 8). To secure the mobility of skilled workers between companies, “training in the company is based on training regulations which the Federal Government has issued for each training occupation. These regulations stipulate inter alia the minimum vocational skills which must be taught as well as the examination requirements” (ibid., p. 9).

(4) As regards to our topic and the specific system of generating occupations in Germany (Sengenberger 1981), the initial questions are:

- Which consequences do the above mentioned changes have for the methods of securing manpower or how do businesses respond to the flexibility requirements, as to be able to procure – quantitatively and qualitatively sufficient – labour with the qualifications required in order to maintain the production and operating processes?
- In view of these changes, is the German Dual System of Vocational Education and Training capable to adapt to these and to meet the future challenges?

We try to answer these questions in the following three sections. In the next section 2 we will be referring to our theoretical basis – the “Münchener Betriebsansatz” and we will show how the topic of Vocational and Educational Training in general and of cross-company learning alliances in particular conceptually can get integrated within this approach before presenting our core hypothesis. In section 3 we will have a closer look at the key elements of those learning alliances as well as its strategies to deal with specific challenges arising from the changes described as well as from its specific structure. In the final section we will draw a resumé by returning to our initial questions.

2. Theoretical basis and core hypothesis

2.1 Vocational education as element of the human resources policy in the “Münchener Betriebsansatz“ (Munich enterprise approach)

(1) The central concept of the enterprise approach (Altmann/Bechtle 1971; Altmann/Bechtle/Lutz 1978; Bechtle 1980; Düll/Bechtle 1988; Köhler/Schmierl 1992; Altmann et al. 1992; Schmierl 1995) is that the capitalistic necessity of exploiting capital manifests itself and prevails as organised domination by the company and in the company in its function as primary location in the working world for solving the “transformation problem“ (Schmierl 2010). A fundamental axiom of the “strategy approach“ is each company’s pursuit of company autonomy vis-à-vis contingent conditions and internal restraints. The plane of action that belongs most to the domain of strategic autonomy of the company is its internal organisation of the “elastic potentials” technology, work organisation and personnel policy. The inalienable socio-economic requirements from the macro level are transformed into company strategies at the micro level of the enterprises, which thus seek to neutralise them.

(2) Our field of research ‘vocational training’ is closely linked to the elastic potential ‘personnel policy’. Therewith we focus on pre-emptive strategies of human resources development as well as on the related questions: In which way and with which goals do such enterprises develop their personnel strategy in order to neutralise external manpower shortages on the labour market?

Our research shows that the decision to conduct vocational education in a company already indicates a commitment to a company strategy in favour of internal vocational training. What is new, however, is that this initial occupational training sometimes takes place as collaboration in vocational and further training. In the past few years, *cross-company learning alliances* have evolved as a model trying to secure occupations and skilled work (Schmierl/Köhler 2006). Such networks, which act as instruments of external training management, have come into being in numerous sectors and regions, not least because of publicly funded pilot projects. In particular, they are viable in the segments of the metal and electrical industries with a high proportion of SMEs (e.g. automotive suppliers, the metalworking and electrical industries). Our momentarily ongoing research project thus focuses on cooperations within the framework of a joint initial vocational training and the establishment of cross-company learning alliances (training cooperations and cooperative

training ventures of several legally independent companies) in the metal and electrical industries.

(3) These development towards network structures requires an extension of the classic theory approach in such a way that it does not only include the single enterprise but also networks in themselves as “strategic actors“ (Schmierl/Pfeiffer 2005).

Firstly, the establishment and maintenance of networks in general and training networks in particular is a demanding task. It confronts the participating enterprises with the need – a need that conflicts with the companies` inherent quest for autonomy – to “transform“ or “neutralise“ the *competition mechanisms* within the network (particularly as regards competition on the labour market for scarce skilled workers or the knowledge that external firms impart to the trainees) with specific measures. Likewise, external changes have to be incorporated into the vocational education system.

From a theoretical point of view, the challenge the company autonomy faces is not only to develop internally-directed strategies but also to *systematically integrate the network*, in this case, the collaborative training venture as a whole, into its strategic orientation. This represents a decisive further development of the enterprise approach. From an industrial sociology perspective, it goes without saying that the company thus comes into conflict with the strategies of other enterprises and with their interest in maintaining their autonomy. The question how the companies try to resolve these conflicting tensions in practice is at the heart of our research.

Secondly, a strategy that used to be primarily geared to the own company and its “elastic potentials” is complemented by a further dimension – the network strategy, which in turns calls for the development of a specific network perspective by the personnel and human resources development policies in particular. For our theory approach, this entails a conceptual extension by two separate dimensions, resp. levels of autonomy protection: *an internal* strategy in the own operational organisation that is geared to cooperation with the network partners and a *network-specific* strategy that is directed at the continuance of the whole network by suppressing internal competition.

2.2 Core hypothesis: Securement and enrichment of the German Dual System by cross-company learning alliances

(1) With this in mind, our *initial hypothesis* refers to the significance of learning alliances:

Given the changes in the labour market and in employment conditions, the companies can no longer rely only on the recruitment of appropriately trained and increasingly scarce skilled workers on the external labour market nor can they solely trust in their permanent willingness to learn. Once they have achieved their vocational qualifications, the employees in turn cannot rely on the flexibility potentials of their occupational fields or on a lifelong service for the same employer in the same occupational field. In fact, the accelerated change processes demand a reorientation of both actors of industrial relations with respect to their understanding of vocationalism and career development. To secure a core supply of skilled workers in their businesses as well as their long-term recruitment, many enterprises consciously pursue an anticipatory strategy by means of *innovative human resources and organisational development models* that also comprise an intensification of own initial vocational training. However, particularly for small and medium-sized enterprises (SMEs) the establishment of an own initial vocational training often fails as they are facing a lack of operational, organizational, personnel or technical infrastructure. Especially for these, cross-company learning alliances are a useful opportunity to ensure the supply of skilled labour in the long term.

(2) We try to test this hypothesis by a qualitative analysis of selected cross-company learning alliances. Based on six company case studies as well as seven expert interviews with the representatives of trade associations, chambers of commerce and industrie and research institutions, problems and prospects of such cross-company learning alliances have been analysed. The case studies included seventeen interviews with heads of personnel, training supervisors, trainers and work councils of the training company. In two cases, additionally a total of ten interviews with training supervisors, work councils of the partner company as well as two group discussions with five apprentices each could additionally be conducted. We delved into the issues with the following questions: Which models are considered to be particularly promising and forward-looking by the participating companies? To which extent are SMEs involved? Which structures do these training partnerships have? Which courses of development did these collaborative training ventures take in the past few years and which general conditions significantly influenced them? Which critical factors for success can be discerned and can be generalised beyond the individual case?

3. Vocational education as a basis of education in the German Context: specifics of cross-company learning alliances

According to a representative survey of the German “Sonderforschungsbereich“ (special research area) SFB580 (Wiest et al. 2011), 40 percent of the surveyed enterprises in machine building/the metal and electrical industries participate in collaborative training ventures. East German companies are three times more likely (60%) to participate in collaborative training ventures than West German enterprises (20 %). This dataset, the SFB580-B2-Establishment Panel, is a repeat survey of personnel managers primarily in small and middle-sized companies by means of computer aided telephone interviewing. The sample was drawn from the nationwide representative establishment panel of the “Institut für Arbeitsmarkt- und Berufsforschung (IAB)“ (Institute of Employment Research) in Nuremberg in 2002. The dataset comprises a total of 362 enterprises - 160 of which in West Germany and 202 in East Germany.

In the following section, we are trying to highlight some results on the characteristics of these training alliances in order to show its innovative and enriching contribution to the functioning of the German Dual System of Vocational Education and Training. Firstly, we will identify some key elements before, secondly, describing the two new types of company strategies that are specific for learning alliances: Internal and network-specific strategies.

3.1 Key elements of cross-company learning alliances

(1) The basis for the establishment of cross-company learning alliances is the *availability and lack of training capacities in one industrial region at the same time*. On the one hand, cross-company learning alliances consist of a training company that is able to provide vocational training in metal and electrical working occupations. Mostly due to strategic corporate decisions as reduction of production departments whilst maintaining the training department a surplus of training capacity as well as of qualified trainers of occupations in the metal and electrical industries remains. On the other hand, there are several companies nearby that by contrast are not able or unwilling to provide initial vocational training, which nevertheless are highly interested in a long-term supply with skilled labour. To achieve a better utilization of the training capacity and to reduce fixed costs, the training company offers various forms of training cooperation for the other firms, hereafter the partner companies, that are

willing to pay for this kind of service. The latter are not only enterprises of the metal and electrical industries, but also companies of other branches or from outside the industry.

(2) A second key element of cross-company learning alliances is the *changing places of learning between the training company and the partner company*. In most of the cases, the partner company is primarily in charge of the training applicants. It selects the trainees itself, concludes the training contract and pays the training allowances. But due to a lack of technical or personnel infrastructure it sends the apprentices for parts of the vocational training to a training company. For the trainees this means that they complete at least parts of their theoretical and practical training sections in the training company together with the trainees from other companies of the collaborative training venture. The financing structure is usually stipulated in a cooperation contract between the participating companies in advance.

(3) The *stability of inter-company learning alliances* is mostly guaranteed by a core of larger medium-sized enterprises that announce a critical mass of apprentices for basic training. Here, the young people spend the first two years of apprenticeship basically in the training workshop of the training company to provide basic knowledge. During the third year of apprenticeship, the knowledge is deepened and adapted to the organizational structure and its specific features in the partner company. The preparation for the exam usually takes place in the training company. This type of cooperation guarantees a fairly stable amount of apprentices and a high planning reliability.

3.2 Internal and network-specific strategies in cross-company learning alliances

(1) Besides the changes already described that complicate the securement of skilled labour – changes in the German production and innovation model as well as demographic changes –, companies participating in learning alliances face additional challenges resulting from the network structure.

Firstly, the companies are confronted with a large number of other enterprises that offer a similar range of training opportunities. In our examined cases, these are companies of the metal and electrical industries as well as of other branches e.g. the food industry that post their demand for metal and electrical working occupations due to increasing automation. Moreover, there are unequal opportunities for companies to recruit applicants. Larger enterprises have noticed a decline in applications, but are still able to find promising apprentices. SMEs, however, are often inferior to those as they are not as known or attractive as

an employer. The proximity of the companies leads to an increasing competition for applicants between the enterprises, especially for SMEs.

Secondly, due to the changing places of learning between the training company and the partner company, the apprentices gain insights into different, possibly more attractive working and production conditions as well as corporate and management cultures. This involves the risk of a missing identification with the employing partner company and of apprentices changing to another company.

(2) Following our theoretical background, companies participating in cross-company learning alliances need to develop strategies on two levels. Firstly, they have to transform the external changes in the world of work on the one hand and competition mechanisms within the network on the other hand (*internal strategy*). Secondly, a *network-specific strategy* is needed that is directed at the continuance of the whole network by suppressing internal competition.

The following sections will present three examples of each strategy which we have identified by examining our empirical cases of cross-company learning alliances.

3.2.1 Internal strategies in cross-company learning alliances

a) *Offering respectively booking customized training programs to guarantee training infrastructure*

One of the key prerequisites to provide vocational training is a guaranteed training infrastructure. All examined training companies offer a wide range of vocation training possibilities for cooperating enterprises with varying extents and intensity. Three different types of cooperation can be distinguished. Firstly, the training company provides the first two apprenticeship years including the first examination at the end of the second year of apprenticeship as well as the preparation for the final examination. Secondly, the cooperating company only books certain training modules e.g. welding courses or PLC-courses. Thirdly, the training company offers the full initial vocational training. Regardless of company-specific conditions and training capacities, it is in principle possible for every company in the region to book customized training programs and to delegate the implementation to the training company.

b) Utilizing high-level training programmes to secure the apprentices' de- and employability

Changing production conditions and rising work requirements lead to a stronger effort needed to ensure and strengthen de- and employability of the apprentices. In cross-company learning alliances the apprentices receive vocational training of a very high professional quality by modern equipment of the workshop and full-time instructors with professional skills. Apart from professional know-how, most of the examined learning alliances focus on the provision of social and methodical competences (e.g. by introductory seminars apart from the working environment or via strengthening the flexibility of the apprentices by having to deal with different styles of leadership, production technologies and corporate cultures). The role of the instructor that has changed into one of a mentor consolidates the independence and problem-solving competence of the young people, who have to plan and carry out work processes from the order acceptance to the final inspection.

c) Increasing investments in recruiting and binding of young talents

The survivability of enterprises is increasingly tied to the successful recruitment and binding of young talents. This applies also to companies participating in cross-company learning alliances due to intensified regional competition. In the recent past, the examined companies increase their spending in advertising their training positions: they offer internships, job application or outdoor trainings; they cooperate with schools and exhibit at career fairs. To improve the binding of the apprentices to and the identification with the employing partner company, a frequent contact as well as a transparent information policy are necessary, especially during the stay in the training company. Therefore, they are regularly visited by their training officers and integrated in production processes during summer months.

3.2.2 Network-specific strategies in cross-company learning alliances

a) Utilizing a mutual strategy to secure the supply with applicants

Cross-company learning alliances allow a mutual support concerning the supply of applicants between the training company and the partner companies. On the one hand, several training companies still experience a surplus of scholars who are able to take vocational training. On the other hand, the companies' selection criteria differ, so that applicants who had been rejected by the training company can be candidates for others. According to our

empirical research, the majority of the training companies inform the remaining applicants about potential partner companies. Especially SMEs benefit from this as they lack resources to promote training vacancies and as they are often less well known or attractive as an employer.

b) Assuring training quality to stabilize the learning alliance

The training company has to guarantee vocational training on a high level. On the one hand, this is necessary as the partner companies can leave the learning alliance anytime. On the other hand, high training quality is the figurehead of the training company to acquire new partner companies and therefore to stabilize the network. The training quality is guaranteed by separate, modern training workshops as well as professional full-time staff. The qualification of the training staff in learning alliances is intensified by continuing education in the fields of communication with young people, team building, conflict management, moderation etc. In some companies, the training schedule and coordination is constantly being improved through customer satisfaction surveys with the partners and apprentices.

c) Developing social-communicative regulations to reduce competition and to promote trust

The success and the survivability of cross-company learning alliances are tied to prerequisites, especially to investments in confidence-building measures as well as in regulations reducing competition between the member companies. Especially reasons for the failure of these alliances that are mentioned in literature – moral hazard, egoisms, fear of loss of knowledge or enticement of promising apprentices – have to be neutralized. To ensure transparency and trust, learning alliances create social-communicative rules – common decision-making bodies, standardized communicating methods as well as institutionalized processes of conflict transformation. In annual meetings of the training partners, all actors have the possibility to take stock of the last year of cooperation and to suggest improvements or to decide on the integration of new cooperation partners, the modification of training contents or occupations.

4. Conclusions

(1) In our conclusion, we want to refer to the initial questions how businesses are able to procure skilled labour under the modified conditions described and if the German Dual System of Vocational Education and Training is capable to adapt to these and to meet future challenges. The key result of our examinations is that cross-company learning alliances can provide an *innovative model* and a useful opportunity to ensure the supply of skilled labour in the long term for metal and electrical industries that are characterized by skilled work and skilled workers. This applies particularly to SMEs which often fail to establish an own initial vocational training due to a lack of operational, organizational, personnel or technical infrastructure.

(2) Following the relevant literature as well as our analyses, cross-company learning alliances have *advantages* for all actors: for the young apprentices, the partner companies as well as for the training companies. In all examined cases, there is a large consensus among the management and the apprentices as well as the works councils. For the training company, the learning alliance secures long-term capacity utilization and the ensurement of the training staff. The cooperating company benefits internally from cost reduction as it is able to dispense with major investments in training capacities. Externally, there are clear advantages in the use of specially and constantly trained staff in the training company. The apprentices receive vocational training on a high professional level due to the modern equipment of the training workshop and highly qualified full-time instructors. Therefore, the works councils act as “natural coalition partners” of the management.

(3) The specific advantage of learning alliances regarding the *changes in the German production and innovation model* is that it obtains qualifications and competencies that are necessary to meet future requirements in working and production processes in a particular way:

As regards to content, within these collaborative training alliances we observe an identity of modern, holistic training contents with future work demands. Through the processing of production orders, the young people are empowered to train their ability to solve problems and to work independently.

From an organizational perspective, the apprentices learn in larger, heterogeneous, perhaps interdisciplinary and cross-company teams. Their methodical competences like the ability to work effectively in a team, project management, flexibility and the capability to self-organize are strengthened. Due to the heterogeneous group of apprentices as well as ex-

periences made across at least two different companies, social competences are assumed and taught.

(4) What importance do cross-company learning alliances then have for the *German Dual System of Vocational Education and Training*? The German production model is highly based on skilled work and skilled workers and thus on the German Dual System as it is the main way of producing occupations (Bosch 2010). This applies especially to the businesses in the metal and electrical industries with a long training tradition. Accelerated changes in this model, however, jeopardise the functioning and survival of the Dual System. From an industrial sociology perspective, learning alliances are an additional element of the German Dual System of Vocational Education and Training and make a contribution to its functioning, securement and enrichment. By opening initial vocational education to network structures, the Dual System is more capable to meet current and future challenges and increases its “absorptive capacity” (Cohen/Levinthal 1990) and “dynamic capabilities” (Teece/Pisano/Shuen1997; Teece 2002; Zollo/Winter 2002).

(5) The previous work offers a central point of connection to the general sociological theory formation and research on *networks* (Duschek 2004; Holmqvist 2003; Staber 1998; Windeler 2001; Windeler/Wirth 2010). Especially the *processes of internal and external knowledge formation* that are discussed in educational and qualification research are promising for further studies. So far, the relation of these processes to vocational training in the context of learning alliances have not been examined empirically and have especially not been backed up by theory to any significant degree. Conceptually, also one can draw on the concepts for the analysis of networks developed by innovation research (DiMaggio/Powell 1983; Powell/Smith-Doerr 1994). In this connection, further questions arise concerning inter-company learning alliances, e.g. on the use of distributed knowledge in the training company or in the collaborative training venture, on the formation of a shared distributed knowledge base, on the protection of training know-how or also on the further development of training networks (exit-voice, drain of knowledge assets, adjustment of the occupational profiles to technical-organisational and demographic changes, promotion of the regional economy...).

(6) Finally, in a political point of view, the empirical studies also promise to open up *education and employment policy perspectives*. The training company as well as the partner companies develop strategies to deal with their specific circumstances in learning alliances. On the one hand, they utilize operational strategies in order to handle the changes in the world of work as well as the intensification of the competitive situation caused by the proximity of the network partners. On the other hand, they try to stabilize the network by developing

network-specific strategies. Thus, training partnerships represent a – due to the demographic change increasingly important – element of operational strategy and autonomy protection.

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