



Conference Report

SKILLS FOR THE
21ST CENTURY

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P R E F A C E

AICGS is committed to advancing policy-relevant research using the tools of comparative methodology. Although developments in Germany are of interest because of the country's size, location, and history, sometimes they are important because German solutions to pressing policy concerns have a "model" character. Emulation is, of course, gratifying to the Germans. But that is not what attracts our attention. Rather, the constellation of institutions and practices that makes up Germany's "social market economy" provides the researcher with an unparalleled real time laboratory for an ongoing experiment in organized capitalism. Over a variety of policy issues, comparison with Germany illuminates advantages and disadvantages of options that would not easily come to mind if the German "case" did not exist. Industrial relations, health-care reform, pollution abatement, intergovernmental relations, immigration, and employment training are just a few of the sectors for which a German component might pay rich dividends to policy analysis.

A generous grant has enabled us to establish the Robert Bosch Foundation Research Scholar Program in Comparative Public Policy and Institutions. Selection of workforce training issues as a first priority requires no extensive explanation. OECD countries have been wrestling, collectively and individually, with problems relating to the level and quality of employment as a matter of priority for years. The implications of EU integration have pushed employment to the top of the political agenda.

The conference "Skills for the 21st Century" on which this Report is based is a direct result of that grant. Leading experts on labor and training issues from Germany and the United States gathered at AICGS on January 10, 1997, to discuss the defining characteristics of and forces challenging Germany's "dual system" of vocational training, its relevance for the United States as well as the lessons of U.S. practices for Germany. Despite



the pressures and the palpable expectation of significant metamorphosis, one could not but be impressed with the resilience of the German system. Indeed, this very situation proved to be an important pivot that governed the discussion of its weaknesses and strengths from the point of view of policy prescription. Should the system be fundamentally restructured in light of technological change, the expanding boundaries of the economic system (unification, globalization, EU integration) and demographic developments? Or should an evolutionary path be followed in adjusting the regime to the new situation? Though hinted at in the discussion, these questions were left for further analysis and debate. AICGS will continue to provide a forum for both.

Professor Kathleen Thelen (Northwestern University, Department of Political Science) and Dr. Thomas Hinz (University of Munich, Department of Sociology) have our sincere thanks for organizing the event reported in the following pages. As our first Bosch Research Scholar tandem, they set the tone for the program. Thanks also go to Bosch Scholar Mr. Pepper Culpepper, who agreed to act as rapporteur.

Carl Lankowski
Research Director



Skills for the 21st Century

Pepper D. Culpepper

I. Introduction

In recent years, the German system of skill provision has occupied a central place in international policy and academic debates about the problems of maintaining a broadly and highly skilled workforce. The dual system of apprenticeship training, thus named because education occurs in both state-supported vocational schools and through workplace training paid for by private firms, has stood at the center of these discussions. Advocates of the dual system attribute various merits to it, such as the ability to fight youth unemployment, its success in encouraging firms to invest in the provision of general vocational skills, and its negotiated system of certification, which assures trainees that they are receiving genuine training while providing employers with an effective device to screen the skills of applicants for new jobs. It is partly on the basis of the dual system that Germany has been able to construct a virtuous “high-wage, high-skill equilibrium,” according to scholars like David Soskice and Wolfgang Streeck.

As a model from which other industrialized countries, including the United States, can learn, the dual system has much to recommend it. Yet it is also a system under strain, from several directions at once. Like in so many areas, German reunification has not translated into the seamless integration of the five new federal states into the training regulations of the Federal Republic, and the difficult restructuring of the eastern German economy has severely reduced employment in the manufacturing sector since 1990. The weakness of employment, and the paucity of firms willing or able to offer new apprenticeship places, has created an extremely difficult environment for training in the new federal states. Critics of the system also question whether the way the system confers skills on



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individuals is compatible with adopting new forms of the organization of production, which put a premium on teamwork and group problem-solving. And the question remains, whether a system designed to qualify the *Facharbeiter* in manufacturing can adjust to the increasing role of service sector jobs in the German economy.

Against this background, contributors to the conference on “Skills for the 21st Century” tried to assess the future prospects of the dual system as well as its lessons for the United States. The two round table discussion sessions touched on both theoretical and practical considerations of how the German model can be reformed, and how the different institutional configuration of the United States circumscribes the adoption of dualistic training measures.

II. The German Vocational Education and Training System in Comparative Perspective

Speakers in the first session presented comments in two veins: 1) problems and competitive possibilities of the German dual system of vocational education and training (Peter Berg, David Finegold, and Karin Wagner); and 2) the institutional features of the American system which handicap its transition towards institutions like those of the dual system (Kirsten Wever and Lowell Turner). The first set of comments highlighted how the system has worked in Germany recently, including its ability to cope with problems of cost and changes in the organization of production. The second comments took the German institutions as a standard whose assumed successes American workplace and labor market institutions had trouble emulating.

The German System: Comparative Problems and Possibilities

Peter Berg, of the Economic Policy Institute in Washington, set the



“high-performance workplace” as the benchmark of firm competitiveness in the advanced industrial economies. Berg designated as attributes of such a workplace multiple lines of communication and participation which cut across the existing hierarchies within the company. This system requires the development of individual and group problem-solving skills. Berg’s high-performance workplace thus demands both individual skill development and changes in workplace organization. Group problem-solving requires that workers have the social competency necessary to combine their efforts in a collaborative work effort, an effort which can blur the contribution of each individual craftsman. At the same time, group problem-solving depends on a high level of individual technical competency from each individual of the group.

Germany’s dual system meets the challenge of passing on these broad skills, especially in its large industrial firms, according to Berg. However, the changes in German work organization necessary to set the “high-performance workplace” into motion are lagging behind the advances in skills, as suggested in a study of the auto industry. While Berg sees experimentation taking place, he contends that the German industrial relations system limits the extent of successful workplace changes.

Even as the system of skill provision outpaces changes in workplace organization, that system of skill acquisition faces several internal threats. Berg points to Ingrid Drexel’s study of the changes in internal labor markets, in which managers appear increasingly to come into German firms from the external labor market, a potential drag on the incentives of investing in individual training through the dual system. Moreover, several broad trends--downsizing, increasing training costs for firms in the 1990s, and the gulf between eastern and western German training--pose potential future problems for the system, some of which were to be discussed in later presentations.

More briefly, concerning the American system, Berg’s prognosis was of a continuing dominance of school-based training in the U.S., even after



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the introduction of the Clinton Administration's School-to-Work initiative in 1994. Industrial apprenticeships in the U.S. are declining, while large manufacturers both reduce the time of apprenticeship and increasingly concentrate only on firm-specific skills. Despite some exceptions, such as the Wisconsin partnership (discussed in a later paper), Berg thus foresaw a continuing need for a more thoroughgoing work reorganization, and an increasing participation of employees, as prerequisites to a generalized transition in American industry towards the "high-performance workplace."

David Finegold, of the University of Southern California, brought some empirical evidence to bear on the themes of the Berg presentation. Finegold's presentation drew on the results of eighteen matched plant comparisons of pump manufacturers in the United States and Germany, a study he had conducted together with Karin Wagner of the *FHTW* in Berlin. The idea of the matched plant comparison is to select pairs of plants in the two countries, plants which produce essentially similar products for the same markets. This research format provides a control for the variables which might differ between plants because they produce for different markets, or even for different segments of the same market. The idea, insofar as possible, is to hold constant these variables which also affect the organization of production, in order to isolate the effects of a specific variable of interest.

One hypothesis tested by Finegold and Wagner was that of Gary Herrigel and Charles Sabel that the German system of skill production inhibits moves to adopt lean production techniques. The argument, in brief, runs that lean production enables the production of high quality goods more quickly and at lower cost than traditional craft methods allow. The German system is said to hinder a transition towards collaborative production techniques because of the existence of skill hierarchies and strong individual attachments to the *Beruf* as a constitutive element of personal identity. A mechanic is strongly attached to his identity as a mechanic, and will prefer to exercise these capacities as a skilled mechanic rather than collaborate with an electrician to solve a problem of



production which may be neither exclusively mechanical nor electrical, but both. Combining their efforts challenges the skill hierarchy in which both the mechanics and the electricians have invested their identities, and they may oppose it for this reason. The Herrigel/Sabel thesis suggests that the current crises of output and employment in Germany may result more from this structural problem than from strictly cyclical economic fluctuations.

Finegold's results show that those German firms which depend most on semi-skilled laborers and mass production techniques are those which have moved most quickly and successfully to adopt lean production techniques, providing partial confirmation of the Herrigel/Sabel thesis¹. Plants which rely most heavily on highly skilled labor have been slower to make this transition, sometimes citing precisely the sort of identity arguments associated with Herrigel and Sabel.

Yet whereas Herrigel and Sabel see the dual system as part of the **problem** of these invidious skill hierarchies, firms in the Finegold sample appear to see it as a way to overcome the difficulties inherent in making the transition to lean production methods. The semi-skilled plants which have adopted the techniques of lean production have subsequently increased their intake of apprentices. Moreover, these plants rely heavily on the functional flexibility of *Meisters*, an outgrowth of the dual system. The identity argument seems to be right, but its consequences for the dual system may turn out to be quite different than those foreseen by Herrigel and Sabel.

Finegold's collaborator in the matched plant comparison, Karin Wagner, presented a paper underlining new cost increases to employers in the dual system of training. Recent scholarly work (by David Soskice and Richard von Bardeleben) demonstrates that German training costs differ according to the

1. This finding holds across countries, across plants, and within plants.



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attributes of the training firm: these differences are apparent between craft and industrial firms, and especially in a comparison of the net costs of large and small firms. Smaller (and craft) firms often have very low net costs of training, as their trainers are generally skilled workers who train during slack periods, and the apprentices are more quickly integrated into the work process in these firms. Firms with more than five hundred employees, by contrast, have workshops and specific staff devoted exclusively to training, both of which increase the costs of training considerably². These differences in actual costs have led Soskice to schematize German training according to a two-sector model, in which smaller firms essentially break even in apprenticeship training, and large firms retain an extremely high percentage of their workers after making these very substantial investments in human capital.

To this body of work, Wagner's paper adds findings of increasing net costs across the board, as well as labor market disequilibria (most severe in eastern Germany) which have detracted from the ability of firms to offer apprenticeship places. A reduction in working time and an increase in the breadth of qualification requirements, coupled with the fact that broader requirements lead to more time spent in vocational schools, means that apprentices in Germany now spend a larger proportion of their time studying than before, which means in turn that they spend a correspondingly smaller proportion of their time in production. As an apprentice's contribution to production falls, the net cost of his or her apprenticeship rises. This affects employers across both eastern and western Germany.

2. Thus, in the von Bardeleben study cited by Wagner, firms with up to nine employees pay on average a net cost of 1,646 DM per apprentice per year; firms of 10-49 employees pay an average yearly net cost per apprentice of 3,609 DM; but firms with over 500 employees have an average yearly net training cost per apprentice of 17,886 DM. And these calculations do not include the consideration of the opportunity costs of a trainers' time, which further increases the difference between large and small firms.



Eastern employers face a further increase in apprenticeship costs, as apprenticeship wages have risen rapidly in the attempt to reach parity with the wages paid in the west. These cost calculations have combined with two other factors to create a serious shortage of apprenticeship places in the east. First, the number of those leaving school has increased in eastern Germany since 1990. Second, the wrenching changes of the transition to the market economy have steeply reduced the number of jobs in the manufacturing industry, while increasing the number of unemployed skilled workers who chase these jobs.

Faced with the pressures of rising costs and an economic downturn, Wagner's diagnosis is not one of crisis, but of a need for reform of the dual system. One step she advocates is the creation of more officially recognized skill certifications, as a response to the continuing need for new professions, particularly in the service sector. Also, the broadening of skill requirements makes it more difficult for firms (especially small ones) to provide the full range of skills mandated by the training regulations. This difficulty increases the importance of inter-firm cooperative training as well as externally supported training centers which can provide additional practical experience for apprentices, as both provide smaller firms with affordable options for apprenticeship training. Finally, and most controversially, Wagner sets the stagnation of apprenticeship wages--or their reduction--as a necessary condition for the continued vitality of the dual system. For the system to continue at an economic advantage for Germany, German firms must be able to keep apprenticeship costs under control.

American and German Institutions Compared

The final two speakers--Lowell Turner of Cornell University and Kirsten Wever of Rutgers University--adopted the German system as a background for highlighting perceived weaknesses in the American experiments of training



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and in American patterns of labor regulation. Both put the tradition of antagonistic relations between management and labor as the central stumbling block to innovations in the American training system, and by extension (especially Turner) to any wholesale adoption of the high wage/high skill equilibrium seen in Germany.

Wever drew lessons for the United States from the research of two other scholars on the problems encountered by promising training innovations in the U.S., at Saturn and Bell South. Whereas the Saturn experiment appears to be stumbling over the adversarial American labor relations system, the Bell South case highlights the temptations of a company faced with a highly decentralized, deregulated environment. Wever lauded the Saturn case, where training targets have been tied to salaries (not meeting targets costs everyone money), as a potentially beneficial innovation for the American auto industry. But neither the UAW nor GM favors this diffusion. According to Wever, the UAW opposes the model because of the informational advantage accorded to the union local by the organization of the Saturn plant; the national union organization fears a diminution of its own control over local branches if the model diffuses. GM opposes widespread adoption of the Saturn model for fear of bringing the widespread codetermination at Saturn to other plants.

Bell South has reduced its initial commitments in the “excellence through quality” training program, which Wever blames on the deregulated telecommunications market. Moreover, with the introduction of a national market for telecommunications, the has company lost some its incentive to be so embedded in the region. Such a case is, according to Wever, extremely unlikely in Germany, where the institutional landscape facilitates the national coordination of standards and the diffusion of innovation. Crucial to this diffusion, she believes, are the communication of works councils with each other, and the established system of collective bargaining. These institutional “rigidities” are not going to be the death of the German model, although they could stand some loosening in Germany.



Wever concluded that German training practices are not closed off to the U.S., but that adopting them depends on the implementation of some of the “rigidities” of the German model.

Turner’s presentation echoed Wever’s prescriptive tone, focusing particularly on the role of strong unions and codetermination in the German system of skill formation. He argued that skill, a central concern of German unions, is not a primary preoccupation of modern American industrial unions. But Turner sees each country as having its own crisis. Germany suffers from the crisis of the “high road,” with labor and other production costs high as well as the established problems of entrenched skill hierarchies. Contrast this with the crisis of the “low road” in the U.S., where firms remain competitive in international markets but the effects of downsizing and the “representation gap” mean that the U.S. does not enjoy generally rising living standards. Turner opined that only strong unions could close off the low road as an option in the U.S., while warning that, without strong unions, the German system of skill provision would collapse.

Discussion

While the discussion following the roundtable ranged widely, several themes elicited multiple interventions. One, posed by Richard Locke of MIT, was the extent to which the models presented (“the high-performance workplace,” “the high road/the low road”) clashed with the actual data in the different presentations. In other words, Locke wondered if the divergence between the actual data and the theoretical models used to describe them should not lead us to call into question those same theoretical models.

Peter Berg showed a good deal of sympathy for this point. David Finegold suggested that German plants which moved from an organization of production



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along the lines of diversified quality production (DQP),³ towards the lean production model, were not going to look exactly like Toyota. What new hybrid would emerge in such a German firm was still unclear. Wever and Turner were both more skeptical that their data diverged so dramatically from the models which structured their thinking. And Eric Parker of Rutgers University, while agreeing that the high road/low road distinction is overused, thought the models were still useful representations of reality.

A second point which recurred in the discussion was a dispute about the American model of training as one that failed to impart skills. Laurel McFarland noted the absence of community colleges from the discussion of the U.S. case, arguing that any comparative perspective on the U.S. had to include this institution. Helga Foster of the German Federal Institute for Vocational Training (BIBB) agreed that the community colleges were a very impressive element of the training landscape in the U.S. Jack Riehl, a consultant for Siemens, added that community colleges and the School-to-Work Initiative of the Clinton administration had been invaluable to Siemens in its attempts to establish initial and further training partnerships in its various American plant locations⁴.

3. Diversified quality production, or DQP, is the term coined by Wolfgang Streeck to denote an economic system based on shorter production runs and more frequent retooling of machines than in the traditional Fordist model of mass production, in which investment in machinery is amortized through very long production runs. DQP allows firms--notably German firms--to better adapt to the volatility of demand in advanced industrial societies.

4. Diverging from the adulatory tone about community colleges in the morning discussion, Eric Parker in his afternoon presentation noted that the community colleges in Wisconsin were "anachronistically structured," and had not therefore played a central role in the Wisconsin Regional Training Partnership.



III. German and American Systems of Vocational Education and Training in Transition

Practical Education: Provision and Certification

The afternoon presentations provided several different angles on the German and American systems of skill provision. Cornell's Stephen Hamilton talked about apprenticeship, understood as practical learning in the workplace, as a mode of learning with many advantages over traditional, classroom-based learning. Based on research in Germany, as well as a four-year experiment conducted in the U.S., Hamilton has identified three sorts of skills taught through apprenticeships: technical, personal, and social competencies. Of these, technical competencies prove much more easy to teach than do personal or social ones, by whatever means.

Hamilton argues that some of the superiority of apprenticeship based learning derives from the attitudes of youth towards the two learning environments. The workplace is an "adult" environment, and it is also one in which students get paid. Apprenticeship thus treats young people as adults in the setting in which they learn, and provides them with an "adult" incentive--wages--for learning it. Practical learning seems both better able to connect theory to reality in the minds of those doing the learning, and to ameliorate the attitudinal perspective of those acquiring the knowledge.

Helga Foster's comments returned the focus to new challenges to the German skill provision system, through the lens of ISO 9000 certification of vocational and continuing education institutes. Two trends in particular attracted Foster's attention, both presaging potential shifts in the way training works in Germany. First, she claims large firms like Siemens are increasingly turning their training operations into profit centers, musing that this trend may herald a move to an increased role for the individual in his or her own further training. Second, she noted that there is hardly a training institute in Germany which is not aiming to be certified by the ISO 9000 standards.



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The latter trend poses threats of its own to German training. One is the question of what exactly is being certified: it is very difficult to test whether or not someone is a good trainer. That which is easily measurable is not necessarily that which is most important in the quality of training. Much more ominous, though, is the question of ISO certification as a rival standard to German training qualifications.

One of the internationally recognized strengths of the German system is the system of negotiated qualifications which establish a national standard, and which are therefore recognized anywhere in Germany. Certification allays the fears of an apprentice, for example, that he or she will gain only firm-specific skills, without any wider applicability. Passing the final test confers an official certificate of general skills in a *Beruf*, one which will be accepted as valid by firms across Germany. The qualification gained by a mechanic trained in, say, a small firm in Bremen is recognized by, for example, a large conglomerate in Munich. The threat of ISO 9000 certification to this system runs as follows: currently, an individual's skills are certified by the training system, making them easily transferable. The acceptance of the ISO standards could draw increasing attention to the institute at which individuals have done their training. Thus certification becomes non-standard across individuals, because some institutes are rated better than others. Once the institute--and not the individual--becomes the bearer of certified training, the once-certain guarantees of nationally recognized certification are called into question.

The provision of vocational and further education in the much more decentralized context of the United States was the subject of the presentation by Laurel McFarland, a consultant to the European Union. At the center of her presentation was the role of education providers, which in the U.S. context generally refers to community and technical colleges. In a market for skill provision which is as deregulated as that in the U.S., McFarland notes that firms tend to participate more at the post-secondary, as opposed to the high school, level. She finds that individuals in this system tend to bear a high proportion of



the costs of training; firms bear a consequently lower relative proportion of these costs. Moreover, McFarland argues that there is an additional decisional burden on individual participants which results in a higher rate of attrition. The system is less structured, so individuals have to make (and are free to make) a much wider range of choices about the design of their own individual course. A final observation about the American system was the strategic behavior of many community and technical colleges, which sometimes intervened in the political domain to restrict competition over a given number of students. This inter-institutional backbiting could impair the freedom of supply of further educational opportunities⁵.

Establishing New Training Institutions

The next two papers looked at the question of the prerequisites for establishing new vocational training institutions. Richard Locke discussed the results of his research in Saxony, one of the new federal states of eastern Germany, which he conducted jointly with Wade Jacoby of Grinnell College. The authors centered the study around two theoretical aims. First, they wanted to study a case in which “best practice institutions”--in this case, the institutions of western German vocational training--could be diffused into a new organizational setting (the new federal states of eastern Germany). For many researchers, the eastern German case offers a natural experiment for the diffusion of institutions, in that it controls many of the variables that can bedevil even the most rigorous cross-national comparisons: different long-term historical trends, cultural characteristics, and many others. While eastern Germany is not western Germany, it shares a language, a culture, and a history.

5. One questioner challenged the real extent of deregulation in the American educational market, given the important public financial role in high schools and community colleges. It would not be right, he claimed, to attribute negative consequences of inter-institutional competition to the deregulation of the system, since much of the abuse stems from the heavy public presence in these secondary and post-secondary institutions.



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For this reason, the transferability of western German institutions to eastern Germany may generate many useful findings about the possibilities of institutional transplantation in other contexts.

The second theoretical question behind Locke and Jacoby's research in eastern Germany concerns the role of associations and social trust in facilitating or impeding this institutional transfer. This issue has gained prominence in social scientific research as a result of the findings of James Coleman and Robert Putnam on social capital. These authors posit the existence of a relational resource specific to communities characterized by dense network ties and a concomitant ease in establishing relations of inter-personal trust. While receptive to the general line of reasoning behind the work on social capital, Locke argues that the resolution of collective action problems depends very much on the pattern of interaction of individuals within and across associations. The "associational density" of an area--the measure prioritized by Putnam, which consists in the number of associations after controlling for population--strikes Locke as under-specified. He puts the emphasis not on how many associations we see, but what sort of relations they maintain.

Not surprisingly, Locke's first finding from the project suggests that the institutional transfer to the east has not gone off smoothly. He criticizes the way in which unification forced the western German institutions of the dual system on the east, and noted that the dramatic restructuring of the eastern German economy has led to a severe shortage of in-firm places. Part of the failure to provide sufficient in-firm places, though, Locke laid at the door of the transplanted institutions' not having taken root across eastern Germany.

However, in examining two cities in Saxony, Leipzig and Chemnitz, Locke asserts that the institutions have in fact taken root, but only unevenly. In their paper, Locke and Jacoby assert that local organizational actors--most notably the chambers of industry and commerce and the chamber of crafts, as well as the labor office and the office of schools--have established ongoing cooperative behavior which allows them to overcome inherent organizational



weakness. One example they cite is a biweekly meeting of representatives of these different groups in Leipzig to share information and perhaps formulate common strategies. In Chemnitz the same actors use these collaborative institutions with much less frequency.

These different patterns of cooperation, they argue, help to explain the better ratio between the supply and demand of apprenticeship places in Leipzig, as compared with Chemnitz, in a broad range of occupations. The absolute number of firm-based apprenticeship places in Leipzig has grown more quickly than in Chemnitz. Locke admits that much of the explanation for these differences stems from the different economic situations in the two cities, citing unemployment figures from Chemnitz (15.7%) which are dramatically higher than in Leipzig (12.4%). However, Locke and Jacoby claim that the stark differences they observe in the apprenticeship market result not only from these economic variables, but also from the different structure of cooperative associational patterns in the two cities.

Eric Parker's paper also deals with the role of associations in an experiment with dualistic training, but in a more narrowly circumscribed sense and on the other side of the Atlantic. His presentation draws on a paper written with Joel Rogers about the Wisconsin Regional Training Partnership (WRTP). Created by companies, unions, and public sector agencies in 1992, the WRTP brought together industrial firms and unions covering about 30,000 workers to cooperate on initial and further training. The WRTP appears to have facilitated companies' increasing their investment in and the access of their workers to training, partially by easing the flow of information and by allowing the firms to negotiate the assessment of skills acquired. The WRTP experiment has created inter-firm cooperation and negotiation with labor; Parker's paper and presentation develop an argument as to how it succeeded in doing this.

Parker designates strong, creative unions as the central organizational variable which makes the WRTP work. The functioning of the WRTP depends



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on a negotiated framework agreed between business and labor, and Parker argues that strong unions were the necessary means of ensuring a negotiating capacity for labor. Once the system is in place, unions continue to play a crucial role. One of the potential problems in a training scheme is the possibility for employer abuse of the system as a way to get low-salaried workers (without providing the employees with high-quality shop-floor training). This potential for abuse creates a monitoring problem: how can employees feel confident that they will not be exploited as cheap labor in a supposed training arrangement?

In the WRTP, unions provide this assurance. Parker's paper makes the point, in fact, that unions have an informational advantage over public agencies which allow them to overcome this monitoring problem: "Unions provide a monitoring capacity which can flexibly adapt to conditions that change across sites and over time, is on-site all the time, and frees up government resources to be put to other, more effective, uses." Both as negotiating partner for employers, and as a way to overcome problems of monitoring due to informational asymmetries, unions appear to provide important guarantees for a negotiated training system like the WRTP.

Parker's presentation spent less time discussing the prerequisites for the other two actors of the negotiated WRTP partnership: management and public agencies. He characterized employers in the area as "pretty disorganized," and it is not clear from his paper how central is the role of an employers' organization. On the role of public authorities, though, Parker draws some very clear inferences from the WRTP experiment. First, state funding does appear to be an important support for nascent cross-sectoral consortia for research and technical assistance to member firms. However, aside from funding these sorts of collaborative institutions, the place of the public authorities in the WRTP is in the back seat: "[D]emanding accountability to the broad goals of promoting training, industrial restructuring and high wage manufacturing compels public officials to allow the parties best positioned to design strategies to achieve the goals, the flexibility, and the authority to implement them." The private sector,



not the public sector, is seen by Parker as the primary force in shaping the agenda of the WRTP; and this negotiated private-sector focus is one of the signal strengths of the experiment.

Discussion

The discussion following the afternoon panel touched on many different issues. One sustained intervention, by Daniel Fallon of the University of Maryland, raised the question of the role of universities in any broader system of skill acquisition. More than fifty percent of those people under the age of thirty in the United States have some experience of in an institution of higher learning, whereas the corresponding figure for Germany is thirty percent⁶. In the U.S., research universities have been the vehicle for dispensing much of this education, which Fallon noted is a very expensive way to train large numbers of people at the Bachelor degree level. And, in the United States, the financing of this training is shifting away from the public sector towards the consumer: in Virginia, state authorities now pay for only twelve percent of the costs of post-secondary education. Fallon argues that this raises the question of whether the United States can continue to support 125 research universities, or whether instead the structure of the system of post-secondary education is in need of overhaul⁷.

David Finegold put the question to Stephen Hamilton of whether the conventional classroom was capable of modification to make it more efficient. Hamilton responded that two factors militated against the classroom's matching

6. A questioner later warned that the American data certainly overstated the real role of higher education in training the American workforce, commenting that only about thirty-five percent of Americans have actually received a post-secondary degree.

7. The same problem is relevant for Germany: Fallon argued that while there are sixty research universities in the Federal Republic, the country can probably only support 10-12 top quality institutions.



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the efficiency of workplace-based learning. First, state-of-the-art equipment is expensive. Companies can rotate their apprentices through shifts on the best machines, while steadily amortizing the machine's high cost through its active role in production. Schools will not be able to match this feature, and are therefore unlikely to be able continually to provide access to the latest relevant technology. Second, Hamilton strongly believes that youths at the age of sixteen are far more open to education dispensed in the workplace, rather than in the classroom, because the former treats them as adults.

Finegold also asked whether American strengths in training and the diffusion of knowledge were not being ignored by the panel. Continuous learning in American companies is alive and well, he added. In addition, in some of the high-tech industries, American firms have been very successful on the market and in diffusing their knowledge, which is not the case for the high-tech industries in Germany.

IV. Conclusion

Given the extreme diversity of the comments and papers at the conference, few clear recommendations or diagnoses emerge. Several presentations noted a host of problems with the functioning of the German model: the rigidity of the system for creating new skill certifications, the rising net costs of in-firm training in both parts of Germany, and obstacles encountered in the transition to lean production. Yet no contributors thought the system was incapable of reform, and some directly praised the fabled rigidity of the dual model. Predictions of the imminent death of the dual system would seem to have been somewhat premature.

Several contributors found common ground in highlighting the conditions necessary for the adoption of more programs of firm-based general training in the United States. Wever, Turner and Parker all agreed on the necessity of a strong, coordinated union movement to negotiate on behalf of labor and to



provide guarantees against management exploitation of training arrangements. Moreover, all agreed on the importance of institutionalizing negotiation between management and labor in order for a durable system of in-firm training to take root. Whether or not the state must enforce this employer-employee codetermination, or whether instead the codetermination could work in a framework unsupported by legal constraints, were questions not resolved in the course of the discussions.

One theme absent from the discussion was the role of employers, and more specifically of employers' organizations. While there was a great deal of consensus about the need for an organizing capacity for labor, the employer side was neglected. Given the centrality of employers to any system of firm-based training, and in light of the acknowledged role of employers' organizations in the governance of the German dual system, this comparative trait merits more systematic treatment in future discussions.

Setting aside the organizational actors, there was also a lack of focus on the broader institutional prerequisites of a German-style training system. The structure of the law and the structure of the financial system represent two gaps in the workshop's treatment of the German system of skill provision. As scholars such as Wolfgang Streeck have demonstrated, the German system of negotiation depends not just on the existence of strong unions, but also on a legal framework which limits the room for maneuver of employers who want to dictate unilaterally to their employees. And as David Soskice has long argued, the access of companies to long-term capital is important in encouraging those companies to maintain a long-term perspective conducive to their investment in the costs of in-firm training.

A final area ripe for further inquiry is the impact of changes in the organization of production on the German system of skill acquisition. This issue is important not only for initial vocational training through apprenticeship, but also through the role of the system of further training in facilitating productivity-



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enhancing changes in the organization of production. Finegold's paper squarely addressed this issue and presented an important empirical test of one prevalent theory, while acknowledging that the interaction of DQP and lean production will probably lead to hybrids as yet unknown. The interaction between ongoing changes in the organization of production and systems of training thus promises to be fertile ground for research into the German model and its future relevance for other industrialized countries.





Program Agenda

SESSION I: The German Vocational Education and Training System in Comparative Perspective

Chair: Kathleen Thelen, AICGS Robert Bosch Research Scholar; Northwestern University

The Pedagogy of Apprenticeship
Stephen Hamilton, Cornell University

Training Institutions and High Performance Work Systems in the US and Germany
Peter Berg, Economic Policy Institute

Can Germany's Skill Creation System Succeed in the New Global Competitive Environment?

David Finegold, University of Southern California

'Best Practice' and the Diffusion of Skills Innovations in Germany and the US
Kirsten Wever, Rutgers University

Vocational Training, Competitiveness, and the Revitalization of the Labor Movement
Lowell Turner, Cornell University

SESSION II: The German and American Systems of Vocational Education and Training in Transition

Chair: Thomas Hinz, AICGS Robert Bosch Research Scholar; University of Munich

Costs and Other Challenges on the German Apprenticeship System
Karin Wagner, FTHW Berlin

New Quality Standards in Vocational Training
Helga Foster, Bundesinstitut für Berufsbildung Berlin

The Diffusion of the West German Training System to the Five New States
Richard Locke, Massachusetts Institute of Technology

The Wisconsin Regional Training Partnership: Lessons for National Policy
Eric Parker, Rutgers University

Lessons from the United States? American Experience with Continuing Vocational Training

Laurel McFarland, Consultant to the EU on Education and Training Policy



Pepper D. Culpepper

List of Participants

Robert Bednarzik

-Bureau of International
Labor Affairs, Department of Labor

Peter Berg

-Economic Policy Institute

Melvin Brodsky

-Office of International
Organizations, Department of Labor

J. William Brumfield

-Bureau of International Labor
Affairs, Department of Labor

Claudio Castro

-Inter-American Development Bank

Kristin Conklin

-National School-to-Work Office

Pepper D. Culpepper

-AICGS Robert Bosch Research
Scholar; Harvard University

Susanne Dieper

-AICGS

Daniel Fallon

-University of Maryland

Karl Feldengut

-Embassy of the Federal Republic
of Germany

David Finegold

-University of Southern California

Helga Foster

-*Bundesinstitut für Berufsbildung Berlin*

James Foti

-KRA Corporation

Anthony Freeman

-International Labor Office

Andrea McGovern Galo

-AICGS

Jutta Gatter

-AICGS Robert Bosch Research
Scholar; Universität Bremen

Stephen Hamilton

-Cornell University

Thomas Hinz

-AICGS Robert Bosch Research
Scholar; University of Munich

Carl Hodge

-AICGS/DHI VW Fellow

Gerald Holmes

-Bureau of International Labor Affairs,
Department of Labor (ret.)

Valerie Kessner

-Academy for Educational Development

Jeff King

-The German Marshall Fund of the U.S.

Dawn Krusemark

-American Federation of Teachers

Carl Lankowski

-AICGS



Robert Lerman

-Department of Economics,
American University

Nathan Lillie

-AICGS; George Washington
University

Richard Locke

-Massachusetts Institute of
Technology

Margarete Lueddemann

-Interdevelopment, Inc.

Kristin McCabe

-American Association of
Colleges for Teacher Education

Laurel McFarland

-Consultant to the EU on
Education and Training Policy

Wade Miller

-AICGS

Mathias Moersch

-AICGS

Jon Oberg

-Office of Legislation,
Department of Education

Katherine Oliver

-Career Technology & Adult
Learning, Maryland State
Department of Education

Eric Parker

-Rutgers University

Marina Podonsky

-BMW (U.S.) Holding Corp.

Louis Reith

-Georgetown University

Angela Reitmaier

-Q-Association

Jack Riehl

-International Management &
Development (Consultant to Siemens
Corporation)

Jeremiah Riemer

Edward Rowell

-American Foreign Service Association

Werner Schuele

-Delegation of the Commission of the
European Union

Robert Shelburne

-Department of Labor

Stephen Silvia

-American University

Nevzer Stacey

-National School-to-Work Office

Bill Stokes

-AICGS

Kathleen Thelen

-AICGS Robert Bosch Research
Scholar; Northwestern University

John Tobin

-Siemens Corporation

Lowell Turner

-Cornell University



Pepper D. Culpepper

Karin Wagner

-*FTHW Berlin*

Dagmar Waters

-Office of Training and Education

Margit Wehnert

-Parliament of the State of Saxony

Kirsten Wever

-Rutgers University

