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Institutions and Social Change:
The Evolution of Vocational Training in Germany

[DRAFT: comments welcome]

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This paper examines the evolution of vocational training institutions in Germany from the late nineteenth century to the present, and uses this as a window on processes of institutional reproduction and change. Whereas earlier generations of institutional analysis focused primarily on the effects of different institutional configurations on policies and other outcomes, a growing number of studies have turned their attention to the question of how institutions themselves develop and evolve over time (e.g., among others, Clemens and Cook 1999; Pierson 2002; Greif and Laitin 2003).

Current work in this area has been largely driven by dissatisfaction with existing treatments of the subject, and particularly those that draw a sharp line between the analysis of institutional reproduction and that of institutional change. One commonly invoked metaphor is a particular version of a punctuated equilibrium model, imported from evolutionary biology for politics by Stephen Krasner in 1988 (Krasner 1988) that emphasizes moments of "openness" and rapid innovation followed by long periods of institutional stasis or "inertia." Such views of political and institutional change are associated with a number of influential works (Mancur Olson's (1982) theory of postwar economic growth comes particularly to mind) but they find expression in a good deal of the literature on "critical junctures" as well as

some treatments of path dependence.¹ Certainly this kind of model captures an important mode of change in political life.

However, one of the most interesting features of political development is that institutional arrangements often turn out to be incredibly resilient in the face of huge exogenous shocks of the sort that we might well expect to disrupt previous patterns and give rise to dramatic institutional innovation. The literature on the political economy of the developed democracies, for example, is full of instances in which particular institutional arrangements (corporatist modes of interest intermediation is one) survived massive macro historical transformations such as industrialization and democratization that completely reconfigured the political and economic landscapes around them. Conversely and equally intriguing, we are often struck by the effect of ongoing but often very subtle changes in institutional arrangements that, over time, can cumulate into significant institutional transformation. Think of the American Supreme Court or of the British House of Lords, both of which have never suffered a full-scale "break down" but both of which have been substantially reconfigured through the ongoing renegotiation of their role and functions in political life.

The fact of the matter is that for most political and political-economic institutions that persist over long periods, we are struck simultaneously by how little

¹ Greif and Laitin (Greif and Laitin 2003) provide a critique of rational choice models based on notions of self-enforcing equilibria in which behavior is generated endogenously and where therefore all change is generated exogenously. Other authors (e.g., Swidler) draw a line between "settled" and "unsettled" times, and in which the latter are characterized by more degrees of freedom as old institutions lose their "grip." In terms of the path dependence literature, Jim Mahoney's definition is the most precise but also therefore the most restrictive, and the determinism that he attributes to "paths taken" strongly implies that any change would have to be generated by an exogenous shock to the system. Some of these different perspectives are based on different conceptions of institutions, a topic that I do not wish to engage here (see Thelen 1999). What I am looking at in this paper is a case of what Pierson calls formal institutions in the sense of humanly devised and codified rules and associated organizational structures (see Pierson ch. 4).

and how much they have changed.² Such observations are unsettling from the perspective of the dominant punctuated equilibrium model of institutional change. Against the idea of alternating periods of stasis and rapid, radical change, there often seems to be too much continuity through putative "breakpoints" in history, but also often too much gradual change beneath the surface of apparently stable formal institutional arrangements.

The contemporary literature on institutions is beginning to produce analyses that provide the conceptual and theoretical tools for addressing these phenomena. Some of the early literature on diverse national trajectories tended to obscure these issues by conceiving of institutions as the "frozen residue" or crystallization of critical junctures, or as the "sticky" legacies of previous political battles (Lipset and Rokkan 1968). However, more recent literature on path dependence and increasing returns effects has pushed the debate forward by specifying the *dynamic* processes that sustain institutions over long periods of time (Pierson 2000a). Increasing returns arguments thus tell an important part of the story; however, they are mostly designed to capture the logic of institutional reproduction, not institutional change. Moreover, in many cases, explaining institutional persistence will require that we go beyond positive feedback arguments. This is because, as we scan the political and political-economic landscapes, we find that institutional survival is often strongly laced with elements of institutional adaptation and even sometimes transformation of the sort that brings inherited institutions in line with changing social, political and economic conditions.

This essay examines the dynamics of institutional evolution through a case study of the German vocational training system since the end of the nineteenth

² I owe this formulation to comments made by Peter Katzenstein at a conference in Cologne,

century. A strong consensus has emerged in the literature that vocational training systems constitute one of the key defining features of distinctive "varieties of capitalism" (Hall and Soskice 2001). Economists mostly agree that the ability of firms to compete in contemporary world markets depends crucially on the quantity and quality of skills their workers command (see, among others, Acemoglu and Pischke 1999; Lynch 1994; Finegold and Soskice 1988). Political scientists have associated differences in training regimes with a range of important political outcomes including income and gender inequality and divergent social policy regimes (Crouch, Finegold, and Sako 1999; Estevez-Abe, Iversen, and Soskice 2001; Iversen and Soskice 2001).

The German system today is characterized by a combination of in-plant apprenticeship and compulsory school-based training, of which I focus more on the former in this essay.³ The German apprenticeship system is, by international standards, extremely expansive (in the number of youth participating) and also highly structured. The broad parameters for in-plant training are set in the context of tripartite bodies at the national and state levels, in which employers and union representatives enjoy equal representation. The national board issues regulations that establish uniform and binding guidelines for the content of training for individual occupations, thus defining what is expected of both training firms and of trainees. Monitoring and supervision of in-plant training is accomplished through employer chambers with compulsory membership (Chambers of Industry and Commerce (IHK) and Artisanal Chambers or Handwerkskammer, HWK). Labor unions are directly represented on the committees within these chambers that deliberate on vocational training issues (see esp. Streeck et al. 1987).

Germany.

In the literature on vocational training, the German model is typically held up as an exemplary case of a "collectivist" training regime that solves a number of knotty coordination problems that typically plague private-sector training regimes.⁴ There are two key features of the system that need to be flagged in this regard, a complex system for skill *certification* and a high degree of skill *standardization*. Skill certification (in combination with associated institutions for monitoring and evaluating training) helps solve problems of credible commitment between trainees and training firms by establishing clear benchmarks for what is expected of both parties. Skill standardization (along with associated institutions for defining and updating skill profiles and for encouraging wage coordination) mitigates collective action problems among firms by limiting disruptive poaching and market failures through free riding.

The German system is frequently contrasted with two alternative models of skill formation that have very different distributional consequences – so-called liberal and segmentalist skill formation regimes.⁵ Very briefly, in liberal training regimes such as in the United States and Great Britain, firms do not invest as heavily in initial vocational training for industrial workers; instead, training takes place mostly through institutions offering formal education that focus on general skills (Hall and Soskice 2001). Such a system is seen as particularly good at producing a range of very high-end skills (high-end services and information technologies, for example), though not as suited to generating a strong supply of blue-collar manufacturing skills. In such a

³ Soskice (1994) contains a very clear and concise description of this system.

⁴ There is a large literature by economists on these issues that I cannot go into here (but see (Thelen 2004: chapter 1)).

⁵ These are broadly based on distinctions made by Hall and Soskice regarding "liberal" and "organized" market economies (Hall and Soskice 2001), but I draw a further distinction among the "organized" market economies between "segmentalist" and "collectivist" systems for skill

system, the acquisition of skills itself depends crucially on the resources that young persons (actually, their families) can bring to bear (Becker 1993), with obvious consequences for the reinforcement of socioeconomic divisions rooted in different educational opportunities.

There is an alternative, "segmentalist" system for skill formation – such as one finds in the large firm sector in Japan, for example – that, like the German system, has traditionally been seen as supporting significant firm-based training and strong performance in manufacturing (Finegold and Soskice 1988; Edwards, Reich, and Gordon 1982; Swenson 2002). In such a system, firms invest significant resources in training workers, mostly in company-specific skills, and they combine these efforts with complementary personnel policies such as seniority wages and internal career ladders. Segmentalist systems are typically associated with a high degree of labor market "dualism" (thus sustaining strong differences between conditions of work in the core and periphery) and they are also strongly associated with company unionism – with implications for organized labor's overall rather weak position at the national level (Streeck 1989; Kume 1998).

The German System: Empirical and Theoretical Puzzles

By contrast to these, Germany's collectivist system for skill formation has been characterized as a crucial component in a larger institutional package that is not only compatible with strong and encompassing unions, but actively supports a particular (and traditionally particularly successful) type of "diversified quality production" that reconciles strong unions with strong performance in world manufacturing markets (Streeck 1989; Streeck 1991; Soskice 1994; Hall and Soskice

formation that draws on arguments by Herrigel (1996) and Swenson (2002). See Thelen and Kume

2001).⁶ As such, the German training system has been invoked as a classic illustration of a number of different theoretical perspectives. From a utilitarian/functionalist perspective, German vocational training institutions are seen as facilitating employer coordination around a "high-skill equilibrium" (Finegold and Soskice 1988). From a power-distributional perspective, it has been assumed to be a reflection of working-class strength (Gillingham 1985). And from a cultural perspective, it has been seen as one of many institutions that embody a distinctly German mode of self-governance that operates through the country's "social partners" (unions and employers) and without much direction from the state (Lehmbruch 2001).

Looking at these institutions from today's vantage point, we can see that each of these characterizations contains an important element of truth. However, historically speaking, they are all wide of the mark. The core institutional innovation around which the German system came to be built was a piece of piece of legislation passed in 1897 by an authoritarian government that was designed to shore up a reactionary artisanal class (of small master-employers) that could serve as a political bulwark against the surging and radical working-class movement. Against prominent functionalist arguments, these institutions were not designed with the economic interests of the industrial sector in mind and they were certainly not meant to reconcile strong unions with anything. Against the power-distributional perspective, organized labor played no role in the genesis of these institutions (in fact the Social Democratic Party opposed the original legislation). And, against the cultural

(1999) for an elaboration of this difference based on a comparison of Japan and Germany.

⁶ This is not to say that these institutions do not embody class biases of their own; indeed, there is a large literature and a longstanding discussion of the impact of early tracking (into vocational versus academic tracks) in Germany. There are other weaknesses, of course, as well, especially in the capacity of this system to generate the kind of high-end skills characteristic of the liberal market economies mentioned above (Hall and Soskice).

perspective, the kind of social partnership on which these institutions are now seen to be a part was really nowhere on the horizon.

How did we get from there to here? Not, actually, though a wholesale breakdown of the old institutions and their replacement with new ones. Indeed, one of the striking features of the system is the resilience of core elements even in the face of enormous disruptions over the twentieth century, which of course in Germany include defeat in two world wars, foreign occupation, and several regime changes including into and out of fascism. These are precisely the kinds of breakpoints that many punctuated equilibrium models might hypothesize to be central. In fact, against the backdrop of many such theories, the question that one would have to ask is how these institutions actually make it to the present, given the magnitude of some of these intervening events and developments.

For understanding the continuities, the kinds of positive feedback arguments advanced by Pierson and others provide a useful starting point, because as we will see, they can tell us a great deal about how key actors were constituted and the kinds of strategies they would pursue with respect to training. To preview a bit, the existence in Germany of a system for skill formation that was controlled by the artisanal sector hastened the demise of skill-based unions by denying them any hope of controlling the market in skills. But beyond this, and more consequentially still, as the ranks of Germany's social democratic unions swelled with workers who had been certified under the artisanal system, unions developed a strong interest in democratizing rather than dismantling that system. Thus, the German case is a powerful illustration of the way in which feedback mechanisms set in motion by the

operation of one set of institutions affect neighboring realms in ways that stabilize those institutions (Pierson 1993; Greif and Laitin 2003).⁷

However, if one told this purely as a tale of positive feedback, one would miss much of what is in fact interesting and important about the way in which these institutions were also transformed through politics, and specifically transformed through the incorporation of groups whose role in the system was unanticipated at the time of their creation. The original legislation provided only a framework for training in the handicraft sector, excluding industry. Key skill-dependent industries such as metalworking and machine building were forced to work around these institutions as they developed their own training practices. In a case of what Schickler (1999) has called institutional "layering," an industrial system was created alongside and parallel to the handicraft system, and the interaction of the two altered the overall trajectory of development – driving it away from the decentralized and deeply unsystematic artisanal system of training toward the centralization, standardization and uniformity that are now considered defining features of the German system.

As importantly, the function and role of the vocational training system in the German political economy were transformed in important ways through the eventual incorporation of labor. Although the Social Democratic Party had opposed the 1897 legislation, the later (after WWII) incorporation of unions into a variety of parapublic corporatist institutions recast the purposes of these institutions even as they contributed to institutional reproduction by bringing the system in line with new economic and political conditions. The general point is that institutional survival depended not just on positive feedback, but also on a process of institutional

⁷ It also illuminates how (what political economists call) "institutional complementarities" are forged historically, as institutions – and even those that embody apparently entirely different "logics of political order" -- "collide" and interact with one another (Orren and Skowronek 1994).

adaptation and even transformation, to accommodate powerful new actors and to address new imperatives, both economic and political. The following sections do not attempt a comprehensive history of the evolution of the German training system⁸ but rather follows the German system through several putative breakpoints to track the way in which periodic renegotiation of the form and scope of these institutions could, over time, cumulate into its political and functional transformation.

The Genesis of the German Vocational Training System in the Nineteenth Century

The crucial starting point in Germany was the suppression of initial tendencies toward liberalization of the sort that occurred in (for example) Britain and the United States. In Germany, too, government policy took a liberal turn in the 1860s, and Industrial Code of 1869 liberalized apprentice training by removing all restrictions on who could set up a handicraft shop and take apprentices. However, in the 1870s the growth of the Social Democratic labor movement elevated the "social question" to the top of the German government's agenda. Along with the better-known carrot and stick policies (labor repression and the precocious introduction of comprehensive social insurance), the Imperial government's policy toward the artisanal sector⁹ was a third key response to the social democratic threat (Blackbourn 1984: 50-51; Volkov 1978: 276; Winkler 1971: 171-75). The German artisanate skillfully appealed to conservatives by portraying itself as the only political force capable of holding the line against rampant liberalism on the one hand, and working class radicalism on the other. The authoritarian government of the day was receptive to such appeals, and

⁸ But see (Thelen 2004), which does provide a much more comprehensive historical account of all of the events and developments that can only be sketched in broad brushstrokes here.

⁹ The artisanate is actually a category that is defined in German law, but for present purposes it is just important to realize that artisans are small producers, self-employed, and also often employers of

had a strong interest in shoring up a healthy, conservative small business sector as a bulwark against political polarization and working class radicalism.

The first legislation of the so-called Reform period (*Novellierungsperiode*) played to the interests of the existing voluntary guilds by granting them more authority in regulating apprenticeship and adjudicating conflicts among master-journeymen and trainees (Abel 1963: 63; Cooley 1912: ch. 3; Schriewer 1986: 83). However, by the 1890s policy-makers had become intensely aware of the weaknesses of innovations built around the voluntary guilds, which were subject among other things to classic collective action and free-riding problems. The result was a much more comprehensive intervention, the Handicraft Protection Law of 1897, which organized the artisanal sector into a network of handicraft chambers (Handwerkskammern) with compulsory membership and which endowed these chambers with extensive parapublic powers to regulate the content and quality of apprenticeship training in the artisanal sector. Among other things the chambers were authorized to set limits on the number of apprentices handicraft firms could take, to establish the required length of training, and to revoke the privileges of firms whose training was not up to their standards (Hoffmann 1962: 11-12; Muth 1985: 21; Schriewer 1986: 83; Abel 1962: 35-36; Winkler 1971: 164; Wolsing 1977: 400-402).

This legislation was crucial to stabilizing plant-based training in the handicraft sector. The existence of a recognized, parapublic and above all compulsory system for certifying skills and for monitoring apprenticeship meant that a fair amount of training would actually take place in artisanal firms (see especially Hansen 1997). This stands in sharp contrast to other countries, such as Britain where – in the absence of reliable monitoring capacities (and indeed, in the context of ongoing conflicts over

others –thus very different from "labor" or "organized labor," which will be another major actor in

skill with unions) – apprenticeship deteriorated at the turn of the century into cheap "boy labour" (Knox 1980; Childs 1990). All signs are that German apprenticeship was headed in this same direction after the liberalization of 1869, but the 1897 law brought "real progress" in mitigating the problem of apprentice exploitation associated with so-called *Lehrlingszüchtereien* (Tollkühn 1926; Hansen 1997).

The existence of this system of skill formation reverberated well beyond the handicraft sector, and had broader and very profound implications for both organized labor and for industry. *For labor*, the most important consequence was effectively to rule out organizational strategies premised on attempting to control the supply of skills in the economy. We now know that the German labor movement was not "born" centralized and in fact at the turn of the century unions hung in the balance between two more or less equally plausible alternatives –craft- (or at least skill-) based organizations versus industrial organization. Many analyses of the triumph of industrial unionism emphasize late and rapid industrialization and/or socialist ideology (e.g., Ingham). However, against the image of a growing polarization between big industry and proletariat (the late industrialization thesis), in fact the organizational landscape in Germany at the end of the nineteenth century was highly differentiated, and a number of different kinds of organizations (industry associations, guilds, craft-based associations of skilled outworkers, and more inclusive proto-unions) coexisted and all "competed for craftsmen's allegiance and membership" in Germany at that time (Herrigel 1993: 385). And, against the socialist ideology thesis, the reality is that the most important unions of the time were overwhelmingly composed of skilled workers with deeply rooted craft identities and interests (Domansky-Davidsohn 1981). The Metalworkers Union, which famously embraced

industrial unionism at its 1891 congress remained heavily skewed toward skilled workers (as late as 1913, 80%) (Schönhoven 1979: 411), and in fact most of the delegates at that congress were representing associations of skilled workers, both "single craft" and "mixed" (Albrecht 1982). These separate craft groupings maintained their own identities under the overarching rubric of the industrial union, and wage agreements right up through the first World War (negotiated individually for separate crafts) reflected this fact (Domansky-Davidsohn 1981: chapter 1; Mosher 1999).

In comparative perspective, the question that emerges, therefore, is why the identities and continuing craft attachments of the various occupational groupings in Germany did not prevent skilled workers from throwing their lots in with social democratic unions that were explicitly committed to industrial organization. Clearly, and crucially for present purposes, one of the factors that discouraged workers from organizing around skills (and associated strategies based on controlling skilled labor markets) was the fact that union expansion occurred in a context in which the "space" for regulating skills was already rather decisively occupied – by the handicraft chambers. In this situation, skilled workers in industry held on to their occupational identities even as they abandoned craft-based strategies and threw their lot in with emerging industrial unions.

In the longer run what this means is that (like in Britain) labor's strength could be premised substantially on skill, but (unlike in Britain) without skill formation itself being contested across the class divide, i.e., with unions trying to limit apprenticeship in order to control the supply of skills. Thus, when unions in Germany entered the picture in terms of skill formation (during the Weimar years in a limited way, later as full participants in overseeing and administering the vocational training system) they

framed their goals in terms of *maintaining the quality* rather than *regulating the quantity* of skills in the economy. This is what made Germany's industrial unions powerful potential allies of industries that were heavily dependent on skills in the pursuit of a collectivist skill-formation regime.

For industry, the consolidation of a system for skill formation in the organized artisanal (Handwerk) sector had equally important implications. As a practical matter, German industry benefited in many ways from this system of Handwerk-based skill formation. In contrast to other countries where skills were an enormous bottleneck in the early industrial period, in Germany emerging industry could rely on a relatively steady stream of certified skilled workers from the artisanal sector. German industry's dependence on Handwerk-based skills was in fact virtually absolute until at least the 1880s and diminished only very slowly in subsequent decades.¹⁰ However, beginning in the 1890s, large firms in the most modern and skill-intensive industries (machine building firms such as Maschinenfabrik Augsburg Nürnberg (M.A.N.), Ludwig Loewe and Company, Borsig, and Koenig & Bauer) began to complain that they were pushing up against the limits (both qualitative and quantitative) of the skills provided by the artisanal sector (Dehen 1928: 27; Tollkühn 1926: 30; von Behr 1981: 60-61).

Responding to the perceived inadequacies of craft training these firms embarked on classically "segmentalist" strategies aimed at internalizing skill formation at the firm level and incorporating training into complementary plant social policies and internal labor markets. In contrast to the traditional *Meisterlehre* model (on-the-job training by working alongside a master craftsman), German's large

¹⁰ In 1907, 46.5 per cent of all youth in training were still in the smallest artisanal workshops (up to five workers (Muth 1985: 36). As late as 1925 training in industry was still concentrated in the small-firm sector; a national business census in that year showed that 55 per cent of all apprentices were being trained in Handwerk firms, as against 45 per cent in industry (Schütte 1992: 65). In fact, to this day, Handwerk is still a major training sector (Wagner 1999: 23).

machine producers sought to "rationalize" training by instituting firm-based apprenticeship workshops. Apprentices would be trained in somewhat larger groups and, initially at least, separate from the production process (von Behr 1981; Eichberg 1965). M.A.N. established its training workshop in the 1890s; Siemens, Borsig, and other large firms in the machine and electro-mechanical industries followed suit around the same time (von Behr 1981: 41 and 69-167; Dehen 1928: 10-12, 35).

These firms epitomized the segmentalist strategies that were gaining ground in other countries (e.g., the United States and Japan) at the same time, linking plant-based training programs to other measures designed to retain and co-opt workers (Dehen 1928: 15, 75-76). Heidrun Homburg notes the establishment of yellow (employer-dominated company) unions in key machine firms including Siemens, Eckert, Loewe, and M.A.N., all of them also leaders in plant-based training as well (1982: 226-28). These companies provided worker housing, established firm-based sickness insurance, improved working conditions, and also pursued a policy of recruiting among the families of current workers (von Behr 1981: 93-94; Rupieper 1982: 85).¹¹ As Anton von Rieppel, the head of M.A.N., put it, in-house training created a "connection between the workers and the plant management . . . so that the workers did not want to leave." (quoted in Ebert 1984: 221, also p.166; see also Herrigel 1996: 105).

However, these firms were hobbled by their inability to *certify* the skills their training conferred.¹² After 1897 the only way to become certified as a "skilled worker" in Germany was through the artisanal (Handwerk) chambers. There existed

¹¹ See also the discussion of company welfare schemes of Krupp, Zeiss and other companies in (Lee 1978: 462-63).

¹² See especially Hansen (1997: 380-91) on the importance of certification.

no similar authority or officially recognized framework to certify *industrial* training and this became a huge source of irritation for those firms who were engaged in such training. Despite the high quality of training provided by large industrial firms, apprentices (but especially their parents) frequently preferred a Handwerk apprenticeship because certification held value and opened up avenues that (uncertified) industrial training did not. Certification was a prerequisite for advancement in certain public sector occupations (Hoffmann 1962: 46); it was also necessary for attaining independent master status (which in turn conferred the right to take apprentices). More generally, Handwerk-trained craftsmen -- with certificates in hand -- could easily move into industrial work, but the reverse was not true, as industry-based training was not recognized in the artisanal sector.

Large machine firms like M.A.N. and Loewe could offer prospective apprentices all manner of privileges and benefits, but what they could not do was confer the status and rights that accompanied skill certification through the Handwerk chambers (Hansen 1997: 512; Pätzold 1989: 275; Schütte 1992: 84). The heads of these firms viewed this discrepancy as preposterous because they knew very well that their training was much higher quality than the "unsystematic" on-the-job training in the artisanal sector. Already in 1902, the association of Berlin Metal Industrialists sought (unsuccessfully) to secure official recognition and certification for industrial apprenticeship in Berlin, and accreditation for the training workshops of that city's premier industrial training firms-- AEG, Borsig, Loewe, and others (Hansen 1997: 510-11). Short of this, individual industrial firms sometimes made arrangements with their local craft chambers to examine and certify their apprentices (Hansen 1997: 273-74; Lippart 1919: 7). However, such ad hoc arrangements, were not stable and indeed, higher failure rates among industrial apprentices simply fueled conflict with

Handwerk, for example, over the composition of the examination boards, and the types of skills to be tested (Lippart 1919: 7; Botsch 1933: 7-8; Führer 1927: 30-36).¹³

The important consequence for present purposes is that, in light of these problems, large industrial firms that depended heavily on skills organized among themselves to demand the creation of a *parallel* system for promoting and certifying industrial training under the collective control of the Industry and Trade Chambers (which were to be endowed with powers equal to those of the Handicraft Chambers). A first important step in the development of industrial training was undertaken in 1908, with the founding of the German Committee for Technical Education (Deutscher Ausschluß für Technisches Schulwesen, or DATSCH). Jointly sponsored by the Association of German Engineers (Verein Deutscher Ingenieure, VDI) and the Association of German Machine-Building Firms (Verband Deutscher Maschinenbauanstalten, VDMA), DATSCH's goal was to "heighten interest in the promotion of a well educated, skilled labor force" (Abel 1963: 41; DATSCH 1910: 4-5; Tollkühn 1926: 38-39). Anton von Rieppel, head of M.A.N. was especially active and served as the organization's first president. By founding DATSCH these companies hoped to increase awareness of the problem of skill formation in industry – partly to garner broader support for their own training efforts but also to spark greater interest on the part of youth in industrial (as opposed to craft) training.

The machine industry's call for reform fell on deaf ears among other segments of industry, however. In particular, heavy industry relied more on semiskilled labor and firms in those sectors were not particularly sympathetic with the machine industry's problems and concerns. Heavy industry occupied a very strong position in

¹³ The pages of *Technische Erziehung*, a trade magazine associated with skill-dependent industries, contains accounts from this period of the problems that Handwerk-dominated certification posed for industry.

the national-level Congress of German Industry and Commerce (Deutscher Industrie und Handelstag, or DIHT), so in 1911 and 1914 when – at DATSCH's urging – the DIHT Social Policy committee took up the issue of industrial training, the response was lukewarm. The committee concluded that "opinions within industry are still so far apart on the advisability of separate examinations for apprentices ... in industry that the DIHT cannot yet take a position on the issue" (Hoffmann 1962: 43). This was the kiss of death because the organization's local chambers of commerce were the ones who would have been administering apprenticeship certification for industry in the machine industry's plan.

We can sum up developments in vocational training to the eve of World War I. The Handwerk based system of skill formation that came out of the Imperial period began to build some of the scaffolding on which Germany's system of vocational education and training would ultimately be built. It did so first by encouraging the development of unions whose strength derived from organizing skilled workers but which were not wedded to strategies based on limiting the supply of skills. And second, the existence of such a system pushed those industries that were heavily dependent on skills toward strategies based on securing advantage within the logic of the system. The Handicraft system was a crucial focal point for the demands of Germany's large machine companies, both as the foil against which these companies, through DATSCH, railed in the prewar period but also (ultimately more importantly) as the model they coveted as they sought to secure separate and parallel certification powers of their own.

The Weimar Republic: Political Coalitions and the Evolution of the System

The Weimar period is less important for what was actually accomplished in terms of formal (legislative) innovation in the area of apprenticeship training for industry than for what was achieved on a voluntary (albeit well organized) basis. Neither of the two key features of the contemporary German system -- a national system for *certifying* industrial (in addition to artisanal) skills and full union participation in the oversight of *standardized* plant-based training -- were consolidated in the Weimar years. However, a good deal of the groundwork for both was laid in this period.

The early years of the Weimar Republic provided an important political opening, and certainly the reform of apprenticeship training was very much on the agenda. The new (Social Democratic) government was extremely receptive to the idea of reform, and initially an agreement between industry and labor on this issue appeared within reach.¹⁴ The corporatist (labor-business) "alliance" that was formed just after the war (Zentralarbeitsgemeinschaft, or ZAG), took up the issue of vocational education reform, and by 1921 its social policy committee had produced a set of guidelines for future anticipated legislation in this area. The proposal called for a uniform framework for the regulation of training, i.e., covering both industry and Handwerk, and oversight would be accomplished through committees composed of equal numbers of representatives of employers and workers.

The most important new voice in the debate on apprenticeship training in the post WWI period was that of Germany's newly incorporated unions. Already in 1919 the unions called for reforms that involved stripping the Handicraft chambers of their monopoly and introducing a more democratic structure, including full union

¹⁴ During the war, the unions had taken up the issue of vocational training in internal discussions, and they had also floated ideas for reform that at least in certain industrial circles were seen as "quite reasonable" (Ebert 1984: 264; Schütte 1992: 28).

participation in overseeing and administering plant-based skill formation (Hoffmann 1962: 95-97; Schütte 1992: 29). As Heinrich Abel notes, what is most interesting here is that German unions had no trouble with the idea of firm-based training; in fact they called for more firms to do more of it (1963: 48). This stands in contrast to the position of socialist unions in other countries, notably Sweden, who preferred school-based vocational education and were skeptical of firm-based training as inherently biased toward employer interests. Clearly this was an option for German unions too, as the public vocational school system was already anyway far more developed in Germany than anywhere else (Sadler 1908; Cooley 1912). However, by this time Germany's unions were themselves invested in a system where large number of their members had earned their own credentials (Schönhoven 1979: 411). In other words, as the ranks of unions like the DMV had swelled with skilled workers certified through the existing system, the union developed strong motives not to dismantle that system but to insist on co-managing it.

The machine industry was labor's nature ally on the employer side when it came to reforming apprenticeship. As we have seen, large firms in the machine industry had their own reasons for wanting to break the artisanal chambers' monopoly on skill certification. In 1918 DATSCH (at the time under the leadership of M.A.N Director Gottlieb Lippart) had set out an eight-point reform program "to overcome Handwerk's hegemony" in this area through targeted cooperation with the unions (Schütte 1992: 29).¹⁵ Handwerk, of course, actively opposed the guidelines proposed by the ZAG, and other segments of industry ranged from indifferent to hostile. However, members of DATSCH endorsed the proposals as a "worthwhile

¹⁵ (Ebert 1984: 276; Vereinigung der Deutschen Arbeitgeberverbände 1922: 142-43). :See also DATSCH Abh. Vol VII, after p. 30 where the chair of the Social committee of ZAG notes the overlap in ideas with DATSCH (in "Discussion").

framework” for reform (Muth 1985: 448).¹⁶ The willingness of firms in the metalworking industry to collaborate across the class divide was also evident on a regional level. In Chemnitz, for example, the regional employers association and the local union reached an agreement in 1919 on the regulation of apprenticeship (DATSCH 1921; see also Ebert 1984: 270, 276; Muth 1985: 448).

Comprehensive (national-level) reforms along these lines did not materialize in the Weimar years, but in fact tremendous progress was achieved on a more or less voluntary basis through a combination of the collective bargaining strategies of unions and the policies of the machine industry through its increasingly influential trade association, the VDMA. First, union collective bargaining policy and evolving industrial-relations institutions proved crucial to the evolution of skill formation in industry during the Weimar years. In contrast to Britain (where resurgent craft unionism reinstated significant wage differentials between skilled and unskilled workers in the tight skilled labor markets after the war), in Germany the institutionalization of collective bargaining along industrial lines (along with massive increases in membership among unskilled workers) produced a sharp reduction in wage differentials, especially between 1919 and 1921 (Mosher 1999).¹⁷ The resulting labor market imperfections provided strong incentives for firms to invest in training.¹⁸ With unskilled labor relatively expensive and skilled wages held back, firms faced strong incentives to move up-market and to invest in worker training. The poaching

¹⁶ ”Beil bezeichnete sie (the proposals) als “ein brauchbares Gerippe für ein Rahmengesetz, das mit anderen Initiativen, wie den in Jahre 1919 aktualisierte Leitsätzen des DATSCH und den Vorschlägen der Gewerkschaften, eine weitgehende Übereinstimmung aufwies.” See also the views of Hans Kellner, who directed the training school for a large machine tool company, in response to later proposals (Kellner 1930).

¹⁷ Wage differentials recovered somewhat after 1922 but never again reached pre-war levels.

¹⁸ For a general explanation of the economic logic see Acemoglu and Pi schke (1998) or Moene and Wallerstein (1995). For comparisons to other countries see Thelen (2004).

problems that typically plague firm-based training were mitigated by somewhat looser labor markets for most of the Weimar years, and industry-wide bargaining reduced incentives for workers to engage in job hopping.

Moreover, despite the fact that union's newly acquired bargaining rights were ambiguous on whether they could conclude agreements on the terms and conditions applied to apprentices, in fact a relatively large number of collective bargains did regulate such issues. Based on a survey of over 3,000 collective bargains from 1922/23, Schütte shows that regulation of apprenticeship was most advanced in the metalworking and machine building industries, where 30% of apprentices were covered by contractual regulations at the regional or local level (1992: 131). According to DMV statistics, the number of collective bargains that included some regulation of apprenticeship rose from 2.6 percent in 1920 to 45.7 percent in 1930 (ibid.). The number of apprentices covered by contractual provisions rose from 61,173 in 1925 to 87,237 by 1929 -- which amounted to 66 percent of the apprentices in the areas covered by the DMV (ibid.).

Turning to the content of such collective bargains reveals that union bargaining went beyond the issue of pay to seek to regulate also the conditions of training themselves (Schütte 1992: 131). Contracts covering apprentices included provisions that limited the number of allowable apprentices, provided for oversight of training and vocational school attendance, laid out the rights and responsibilities of apprentices and firms, and established the length of apprenticeship (Schütte 1992: 132). Since these are all things that in the Handwerk sector would have been overseen by the chambers, union collective bargaining policies provided a kind of functional substitute, offering “an answer to the questions that had been left unanswered by the industrial code” (Schütte 1992: 131) which as we have seen

regulated Handwerk but not industrial apprenticeship. In addition, unions had a strong interest in ensuring that the skills taught by training firms were general rather than firm-specific, not just because portable skills would enhance the market position of their members, but also as part of their ongoing battle against "yellow" (company) unionism in this period.

Who was willing to negotiate with unions over these issues? The answer is small and medium-sized skill-dependent firms (whose size made it difficult for them to internalize training and who therefore favored skill standardization), as well as larger producers in densely populated industrial centers where collective bargaining might offer relief from disruptive poaching through a degree of wage standardization.¹⁹ Many such producers could be found clustered in what Herrigel has called Germany's decentralized industrial districts that anyway traditionally had developed rather strong networks for inter-firm cooperation (which had traditionally operated as term-fixing and specialization cartels), as well as very fluid relations between labor and capital (rooted in the "high circulation of owners in and out of wage labor") (Herrigel 1996: 50 and chapter 2 *passim*). The enormous dependence of firms on skills in such regions meant that skilled workers had always "played an important role in the management and governance of flexibly specialized production" (Herrigel 1996: 50). It is not surprisingly, therefore, these were also the kinds of firms and regions where the Metalworkers' union had achieved a substantial presence from early on, even before World War I (Schönhoven 1979: esp. 416-17), as well as

¹⁹ For large integrated producers that dominated the local economy (e.g., M.A.N.) poaching was not such a big problem. But it was an enormous headache for employers in centers of machine building like Berlin. There, metalworking employers in 1919 even sought (unsuccessfully) to impose also wage maxima so as to limit the problem. Unions obviously cannot help employers impose upper limits on the wages that firms are willing to pay, but multi-firm contracts can relieve problems of job-hopping through wage standardization.

the areas most widely covered by collective bargains including apprenticeship regulation after the war (Schütte 1992: 131).

These were also the kinds of firm that, during the Weimar years, became an increasingly important constituency within the pivotal national-level trade associations, above all the national Association of German Machine Builders (VDMA) that had helped to create DATSCH and that had actively sponsored its efforts in the area of training. The Berlin machine industry remained a core constituency in DATSCH and VDMA through the Weimar years but over the 1920s they were joined by ever-larger numbers of smaller producers from the so-called industrial *Mittelstand*. Whereas the VDMA (and by extension DATSCH) had been dominated by a relatively small number of large machine companies in the pre-war period, already by 1923, the VDMA had expanded massively to organize fully 90 percent of all machine construction firms in Germany (Feldman and Nocken 1975: 422).

The changing composition of the VDMA and DATSCH advanced the cause of collectivism and skill standardization tremendously, for it drove an extremely consequential shift in the goals and activities they were pursuing in the area of training. Whereas the large companies that had dominated the VDMA before the war had focused their energies primarily on the issue of *certification*, the Weimar years brought the issue of *skillstandardization* to the fore. In this way, the mission of DATSCH was redefined and redirected away from political lobbying for certification rights for large firms and toward the technical tasks associated with establishing a collective framework for skill development for industry (and especially the machine and metalworking industry) as a whole.

The 1920s in fact mark the high point of DATSCH's most intensive efforts at developing a framework for standardized, uniform training in industry (Muth 1985: 348-52). The organization's pioneering efforts to systematize and rationalize industry-based training earned it considerable prestige and established it as a widely recognized authority in this area.²⁰ Together with the VDMA and the Association of German Metal Industrialists (VDM) DATSCH worked out a "model" apprentice contract for the entire machine industry (*DATSCH Abhandlungen* 1919: 6). In the 1920s, DATSCH produced a standardized inventory of skilled trades for the metalworking industries (including a number of new, specifically industrial trades), with profiles of the content of skills required for each. The organization also generated and disseminated standardized training materials, including very detailed training courses (*Lehrgänge*) for the various trades, beginning with the most common -- machine builders, fitters, toolmakers, patternmakers, moulders, smiths, and precision mechanics.

Although it is difficult to know how widely implemented DATSCH concepts and methods were, there are indications that key industries such as metalworking employed them on a relatively broad scale (Schmedes 1931: 12). Muth, for example, asserts that despite the fact that DATSCH guidelines were voluntary, nonetheless "with the support of the individual trade associations (*Fachverbände*) they were widely distributed in practice. In this way the mechanical industry became the first sector in Germany to implement a broadly uniform system of vocational training" (1985: 350). A contemporary observer, Gertrud Tollkühn, similarly argued that the guidelines and training materials that DATSCH produced and disseminated "were indeed used by most of the firms as a foundation" for their training (1926: 40). In the

²⁰ DATSCH received material support for its efforts through the Reichskuratorium für

absence of regulatory powers like those of the Handwerk sector, the capacity of these firms to enforce uniform standards rested on the participation of the unions, and especially, on the efforts of strong trade associations like the VDMA (ibid.).

Despite significant advances on a voluntary level, the overarching legislation to put vocational training in industry on sound legal footing that was sought by unions and some segments of capital did not materialize. Simplifying greatly, we can characterize the politics of skills during the Weimar Republic in terms of the early failure of a coalition for the reform of apprentice training premised on a core alliance between the machine industry and newly incorporated unions (and with the strong support of key ministries, especially Labor) and the growing strength of an alternative coalition that opposed all such reform and resisted any form of collectivism in the name of preserving managerial prerogative. The coalition against reform grew over the Weimar years, but the core of it was an alliance (mostly of convenience) between Handwerk and heavy industry.

Handwerk, for its part, was completely consistent in its position and opposed all reforms from the start. Unlike most industrial firms (and certainly the large machine firms that led the way in industrial training), artisanal firms relied very heavily on the productive labor of apprentices (Hansen 1997; Abel 1963: 45). Handwerk sought to maintain a monopoly on certification because they saw clearly that without this, artisanal firms would have a very hard time competing with industry (which offered higher wages and better – more systematic-- training). For this reason, local handicraft chambers sabotaged efforts through out the Weimar years to allow industrial apprentices to have the same status as handicraft apprentices – for example, causing problems in the constitution of examination boards, failing to recognize the

results of tests for industrial apprentices and refusing to admit those training in industry to take the master exam (Kipp and Miller-Kipp 1990: 234). In addition, Handwerk was adamantly opposed to union participation in regulating apprenticeship, since this would obviously undermine Handwerk's ability to use apprentices as a source of cheap labor (Schütte 1992: 126, 131).

In addition, other segments of industry had never been that sympathetic to the machine industry's position on certification and industrial training.²¹ In particular, heavy industry employed mostly semiskilled labor and had never been as concerned with the supply of skilled labor. In most cases large concerns in this industry were more capable of pursuing successful segmentalist strategies (Hansen 1997: chapter 3; Herrigel 1996: chapter 3). Such companies often grew up in areas without infrastructure so they were forced to create their own skill capacities, but they were also less vulnerable to poaching than in areas like Berlin where competition in skilled labor markets was fierce. Where firms dominated their local labor market, they were able to attract good young workers, and orient their training very closely to their own internal needs (Kaiser and Loddenkemper 1980: 62).

Heavy industry grew even less accommodating through the Weimar years. The leading firms had been willing to accommodate organized labor early on, but once the revolution died down, most had reverted to their previous *Herr-im Hause* stance. As the debate over training, however, did not abate (in part because of the advocacy by the Minister of Labor), heavy industry went on the offensive and developed an explicit alternative to the collectivist system being pushed by DATSCH in this period. At a 1925 meeting of the Association of the German Iron and Steel Industrialists (VDESI), leading Ruhr industrialists founded a new institute, the German Institute for

²¹ Hal Hansen emphasized the importance of this to me.

Technical Training (Deutsches Institut für Technische Arbeitsschulung or Dinta) which was devoted to the cultivation of a special kind of worker trained by and for individual firms and instilled with deep loyalty to the company.

The Dinta training concept shared with DATSCH a critique of the "unsystematic" nature of training by Handwerk, and the technical/practical component of training featured a rather broad-based foundational instruction (often in separate training workshops) followed by more specialized on-the-job training. However, whereas DATSCH represented a collectivist approach to skill formation, Dinta's conception was resolutely segmentalist. Dinta training involved heavier doses of ideology (militaristic elements were pervasive in Dinta training, the idea of a strong company leader, and trainees were expected to exhibit discipline, obedience, loyalty and industry), and adopted a much more distant relationship to organized interests (including organized business interests and trade associations) since training was specifically designed to cater to the specific needs of individual firms. Responding to the idea of working through employers associations and other organized interests, Dinta's leader Carl [he later adopted the more Germanic spelling Karl] Arnhold opined: "with this path, we would probably have gotten stuck or organized ourselves to death" (Arnhold 1931: 31).

Dinta represented a different approach to training from the existing Handwerk system -- more systematic, more autocratic, and more ideological. However, in the context of the reform debates of the 1920s, Dinta's interests dovetailed with those of Handwerk on the issue of unions. Given its orientation, Dinta and its core supporters within heavy industry were adamantly opposed to any legislative initiative that would have given unions a place at the table when it came to vocational training. Thus the interests of the two converged strongly in their anti-unionism, and this provided

sufficient glue to hold them together over the late Weimar years in their shared opposition to reform.

Events in the mid 1920s promoted more intense inter-industry coordination on skills even as they completely undermined any possibility of reform – and certainly any reform based on union participation. Indeed, the readiness of any segment of capital to pursue the latter was dissipating rapidly, as political and economic context shifted considerably after the mid-1920s.²² Unions by this time were on the defensive and in the economic turbulence that followed the hyperinflation of the early 1920s, arbitration was increasingly filling in where free collective bargaining failed (Nolan 1994: 161). Thus not only was organized labor much weaker, but also those sectors that had been most willing to contemplate some form of joint (union-employer) regulation balked, as it increasingly looked as if "union regulation" in the end meant "state regulation," which was the one thing that all segments of German business – for all their differences – could agree to try to avoid (Feldman 1970: 126). Combined with the continuing opposition of Handwerk and the increasingly virulent anti-unionism among big industry as a whole, this constellation formed the basis for a coalition against reform. As the executive committee of the peak organization of the Industry and Trade Chambers (DIHT) put it in 1929, "The DIHT has pointed out several times in the last years that in light of the positive developments in apprenticeship training arrangements on a voluntary basis...there is no urgent need for comprehensive legislative regulation (Hoffmann 1962: 101).

In other words, the time for reform had come and gone: vocational training was off the agenda for the remainder of the Weimar years. The Depression of 1929 dealt the final *coup de grace* to any reform initiatives, as vocational training itself

spun into crisis. Yet, the Weimar years had produced an important legacy, for the system that was implemented subsequently under the Nazis built in important ways on the institutions and practices that had developed in the interwar period.

The Evolution of the System in the Nazi era

The years of National Socialism had a dramatic impact on vocational training in Germany though what Wolfgang Streeck characterizes as the "generalization of preferred solutions" and the "homogenization of sectoral arrangements" (Streeck 2001: 22, 26). The Nazi regime accelerated massively the extension of a collectivist system of skill formation that had been developing on a voluntarist basis in the Weimar years but whose expansion had been limited by a number of political divisions both between industry and labor and, especially, among different segments of capital. Some of the political obstacles that had frustrated attempts in the Weimar period to arrive a unitary and comprehensive national system for skill formation were swept away through brute repression – for example, the elimination of the unions removed the need to reach an accommodation with organized labor on this subject. Cleavages between Handwerk and industry were dealt with through policies that alternately played to and overran the interests of the handicraft chambers. But the most important cleavage of the Weimar years, between segments of industry representing and advocating radically different models of training was overcome in a more indirect and unanticipated way, though a unity of interests forged in the context of industry's efforts to shield itself from unwanted interventions by the national socialist party and its ambitious progeny the German Labor Front (DAF). I begin

²² The SPD's departure from government in 1923 was clearly important to the failure of the reform movement, though the debate over reforming apprenticeship continued until at least 1928.

with the impact of Nazi policies on training before returning to the politics that produced these outcomes.

The Nazi state presided over two important developments, a massive expansion of training, and the drive toward standardization to render such training uniform across the economy. The expansion of training in the first two years of the regime was connected to other measures to combat unemployment but starting in 1935 the goals shifted to rearmament and mobilization for war, which required large numbers of skilled workers who could be deployed flexibly to meet the demands of military production. The government provided direct subsidies for training, but in addition, and in a move that the Free unions had once advocated but that no Weimar government had ever seriously contemplated, state policy also required firms in the iron, metal, and construction industries employing ten or more workers to train apprentices (Hansen 1997: 607; Wolsing 1977: 60; Schneider 1999: 370). These measures produced a dramatic rise in the overall number of youth in training.²³

An important focus of attention under the Nazi regime was training *in industry*, would obviously be of crucial importance to the military. Thus, beginning in 1935, a number of measures were undertaken to upgrade and clarify the status of industrial apprenticeship – with the goal of redirecting labor out of Handwerk and into industry (particularly the metalworking industries). Against opposition and foot-dragging by Handwerk, the Industry and Trade Chambers were granted powers equivalent to those of the Handicraft chambers to test and certify industrial skills, and the industrial (*Facharbeiter*) exam was accorded the same recognition and status that

²³ Whereas in 1933 about 45% of industrial workers were skilled, after 1938 almost all (90%) of boys leaving grammar school were entering into apprenticeship training (Gillingham 1985: 428). The number of training workshops in place at the firm level increased between 1933 and 1940 from 167 to 3, 304 (Kipp and Miller-Kipp 1990: 34, from Eichberg). Whereas in 1933, only

journeymen's exam in the craft sector had long enjoyed – including the right of certified industrial to be admitted to the Master exam (Pätzold 1989: 276; Greinert, 1994 #543: 45). These measures brought about an immediate dramatic increase in the number of apprentices taking industrial *Facharbeiter* exams, rising from a little under 24,000 in 1937 to over 110,000 only two years later.

The other aspect of vocational training policy, skill standardization, was similarly designed to facilitate the regime's war machinery. Broad-based, standardized training would generate a supply of skilled workers who could be deployed flexibly to deal with increased production demands and with continuous changes in production as increasing numbers of men were called up (and, later, as production sites were dispersed to shield them from attack). One such measure was the introduction, in 1935, of a model “apprentice contract” that laid out conditions governing both the terms of a trainee's employment and of his or her training (Wolsing 1977: 254ff) as well as the specific competencies that were expected to be covered by training firms and to be mastered by trainees. DATSCH was tapped by the Economics Ministry and designated as the government's main advisory organ for training matters. The organization was specifically charged with developing skill profiles and regulatory instruments (Ausbildungsordnungen) that would be disseminated on a national level (Kipp 1990: 229; Münch 1991: 34; Pätzold 1989: 274-75.; Abel 1963: 59; Stratmann 1990: 47-49). Since apprentices could only be trained in recognized occupations and on the basis of standardized training materials that DATSCH developed, these measures imposed a much higher degree of uniformity across sectors than ever before, ensuring that anyone certified as a “skilled

16,222 workers had received training in such workshops, the number rose to 244,250 by 1940 (Pätzold 1989: 278).

mechanic" (for example) possessed the same technical skills and theoretical knowledge irrespective of the firm or sector in which he received his training.²⁴

The capacity to monitor in-plant training was also enhanced under the Nazi regime. Already in 1933, the government introduced a national register of all apprentice contracts that obliged all firms employing apprentices to register their indentures with the local chamber (either the craft chamber or the chamber of industry and commerce), the latter then being charged with responsibility for making sure that the contract conformed to the "recognized" occupations and to the uniform apprenticeship contract guidelines set by the state.²⁵ Starting in 1937, journeymen and industrial specialist exams were made compulsory for all apprentices on completing their indentures. This compelled masters and training firms to present their apprentices for evaluation, and it served as much to monitor the quality of the training offered by the firms as to certify the skills of the apprentices (Hansen 1997: 608). Exam scores were collected by the chambers, thus offering the possibility not just to keep track of the numbers of trainees in various occupations (important for Nazi policies of occupational steering) but also to assess the quality of training that was taking place in particular firms (Wolsing 1977: 265ff, 265f; Kipp 1990: 227; Frese 1991: 302).²⁶

²⁴ DATSCH was also given greater responsibility for creating stronger links between the in-plant and school-based components of vocational training (Pätzold 1989: 274). The trade school curricula were specifically organized around the trade profiles that DATSCH had worked out for in-plant training (Kipp 1990: 228)

²⁵ Handwerk had maintained such a register since the turn of the century, but no such instrument had existed for industrial apprentices (Kipp 1990: 227).

²⁶ Monitoring of the content and quality of training was also accomplished through other complementary institutions and practices. For example, in 1934 DAF organized the first annual skills competition (*Reichsberufswettkampf*) involving hundreds of thousands of apprentices in every craft, trade and profession (Mason 1966: 124). The competition consisted of a set of tasks-- uniform across the country-- and contests were held at the local, district, and regional level, producing about 400 winners each year (Gillingham 1985: 425; Kipp 1990: 220). As the head of the competition, Arthur Axman, put it, the event operated like an "X-ray for vocational training"

As important as the *policies* were the *political realignments* that took place during the Nazi period around the issue of skill formation. Take Handwerk first. The advent of National Socialism initially produced a series of policies that could only warm the hearts of Germany's organized artisans. In addition to suppressing the unions, the Nazis conceded to the Handwerk sector some important long-standing demands (Pätzold 1989: 268). For example, in 1935, the government signed into law the “major [or comprehensive] certificate of competence” (*großer Befähigungsnachweis*) that required a Master-certificate of anyone wishing to open an artisanal shop and/or to pursue an artisanal trade independently (von Rauschenplat 1945; Greinert 1994: 45; Berghoff 2001: 81).²⁷ The Nazis also rendered membership in the artisanal organizations (i.e., the guilds not just the chambers) compulsory, another long-standing demand, and a measure that brought an increase in the density ratio of Handwerk associations from 70% to 100% (Weber 1991: 112-113).

However, Handwerk was less enthused with other innovations, for example the commitment on the part of the Party to guarantee all youth a training spot, which clashed with the goals of important segments of Handwerk that had been using their prerogatives to set limits on training as a way of protecting their trades (Pätzold 1989: 267).²⁸ Importantly in the present context was that Handwerk lost its monopoly

which could be used to reveal technical but also ideological deficits in training (Kipp 1990: 254; Pätzold 1989: 275).

²⁷ Until this time, a master's certificate was not required, and in fact only about 30% of self-employed artisans had one at this time (Berghoff 2001: 81; Lenger 1988: 197). It turns out that those without the certificate were not actually stripped of their right to practice a handicraft trade. Instead, most of them were given until the end of 1939 to “make up” the exam, and even this was relaxed later (though the regulation did of course affect anyone seeking Master status after this) (Lenger 1988: 197).

²⁸ Other policies were resented for the higher operating costs they imposed on Handwerk firms. For example, innovations in the apprentice contract (e.g., guaranteeing a minimum vacation time and other limitations on apprentice working time) and the introduction of a compulsory trade school component to training weighed on master-artisans who were used to relying heavily on apprentices as a source of cheap productive labor (Pätzold 1989: 270). Handwerker also complained about

position to certify skills (Lenger 1988: 199). After the 1935 legislation discussed above, Handwerk competed with industry for qualified workers, a contest in which artisans mostly lost out (Berghoff 2001: 82; Wolsing 1980; Lenger 1988: 199). In addition (or in combination with this), Handwerk suffered major cut backs in autonomy in the area of training (Schneider 1999: 371-72). Until then, individual Handwerk chambers had a great deal of leeway to develop their own local standards, and individual masters had significant autonomy to determine the content and structure of apprenticeship training in their own shops (Hansen 1997: 617; Greinert 1994: 50). However, as we have seen many of the organizational innovations introduced under National Socialism had the effect of promoting standardization—something that some but by no means all handicraft firms welcomed. Overall, the effect of the Nazi era on the Handwerk sector was quite differentiated – very lucrative for those artisans who participated in the military boom, more negative to fatal for more marginal producers, a fair number of whom were weeded out altogether through the so-called *Auskämmeaktionen* in which artisanal shops were forced to close to free up labor for industry or for the army (Lenger 1988: 198-99).

On the side of industry, the Nazi regime presided over a growing unity of interests in the area of vocational training, even among firms that had previously represented very different models of training. The repression of the unions played to the interests of many segments of industry, and eliminated any need to compromise with organized labor on skill formation. In addition, those industries (e.g., machine-making) that had long sought standardization and separate certification of industrial training on par with the handicraft training system were much heartened by the national-socialists bold moves in this direction.

high contributions to compulsory organizations, as well as to the introduction in 1937 of

In fact, these moves had the effect of recasting the debate entirely: the apparatus for a more uniform and standardized, collectivist, system of training in industry was now a fact; the question was who was going to run it. The story of the Nazi period in this regard was one in which organized business (and it is perhaps important to remember that a higher degree of business centralization and organization was of course itself a product of Nazi policy) rushed to occupy the regulatory space opened up by Nazi training policies, and then to defend it. The relevant conflicts were played out mostly in alliance with the state Economics Ministry (RWM), and mostly against the German Workers Front (DAF) – the latter having now replaced organized labor as posing the greater challenge to managerial autonomy (Pätzold 1989: 278; Seubert 1977: 99-104).

The conflicts within the regime over training between the RWM and the DAF involved a cast of characters including some familiar players, among them Dinta and DATSCH, each of which was subsumed into a different part of the regime (Kaiser and Loddenkemper 1980; and also, especially Seubert 1977).²⁹ Dinta was incorporated into the DAF, a key party organ,³⁰ at which point its mission underwent a consequential transformation. DAF leader Robert Ley sought to lay claim to a large role in training policy, and for his purposes Dinta was important for bringing the technical expertise that DAF needed to anchor itself in this area (Wolsing 1980: 305).

compulsory accounting (Lenger 1988: 197, 200).

²⁹ The split between the Economic Ministry and the DAF, and the animosity between the leaders of the two—Hjalmar Schacht and Robert Ley – was by no means confined to issues of vocational training. See, for example, Hayes (1987:ch. 4). The specific conflicts between the two over vocational training are analyzed at great length in (Wolsing 1977; Frese 1991: 251ff).

³⁰ Dinta first (in 1933) became an independent but associated institute known as the Deutsches Institut für Nationalsozialistische Technische Arbeitsforschung und –schulung, (Seubert 1977: 96; Kaiser and Loddenkemper 1980: 78; Greinert 1994: 46), and a year later the organization was absorbed into the DAF when Arnhold was named head of DAF's Office for Vocational Training and Works Management (Amt für Berufserziehung und Betriebsführung, AfBB) (Seubert 1977: 98; Greinert 1994: 46; Schneider 1999: 209-210).

There were also the obvious affinities between Dinta's ideology and those being expounded by DAF – anti communism, anti-unionism, and especially the idea of a plant community (von Rauschenplat 1945: 14-18; Kaiser and Loddenkemper 1980: 84; Seubert 1977: 90). For Dinta's leader Arnhold, conversely, the association with DAF also had its attractions. The most obvious advantage was that the connection gave Dinta access to the resources of a major player in the new regime, and certainly Dinta did not want for resources in this period (Nolan 1994: 234).

DATSCH, meanwhile, had been incorporated into the state, although on quite different terms. In the first years, the organization remained a purely private economic institute, with a loose affiliation to the Economics Ministry, but by 1935 it had been officially designated as the Ministry's main advisory organ (Wolsing 1977: 430; Greinert 1994: 46). It was later (1939) converted into a governmental agency in its own right, the National Institute for Vocational Training in Industry and Commerce (Reichsinstitut für Berufsausbildung in Handel und Gewerbe), and endowed with authority to directly promote the creation of “a unified system of skill profiles and training” – and not just for industry but for Handwerk as well (Wolsing 1977: 278-79; Pätzold 1989: 273). DATSCH remained strongly connected to industrial interests in general and to employers' chambers in particular. Backed up the Reich Ministry of Economics, DATSCH represented a perspective on training that was at odds with DAF's more ideological approach and it became the rallying organization behind a defense of employer self-regulation in a context in which claims to co-manage training raised by organized labor throughout the Weimar years had been eliminated, but had been replaced by "meddling" on the part of party and DAF functionaries.

At first, heavy industry had looked favorably on Dinta's absorption by the DAF, thinking that this would anchor their training concept within a key national-socialist mass organization (Frese 1991: 255). However, it soon became clear that Ley's ambitions to claim "complete authority" to decide on all aspects of training policy would represent significant encroachments on managerial autonomy. Ley considered the private-sector organizations of self-government (e.g., chambers) to be "relics of old system," and sought to subordinate them to the Party (Seubert 1977: 105; Wolsing 1977: 241; Mason 1966: 124; Greinert 1994: 45-47). Industrial giants like Krupp and GHH who had long supported Dinta and adopted its methods of training as ideally suited to preserving firm autonomy in training, distanced themselves from Dinta after its incorporation into DAF (as the AfBB) in 1935 (Frese 1991: 252, 255-257).³¹

These firms instead saw their interests as represented by DAF's main opponent in the state, the Economics Ministry, which especially under Hjalmar Schacht was closely allied with organized business interests (Ullmann 1988: 198). Ley and Schacht jostled over a much broader set of issues, but vocational training policy was a major point of tension as Ley proceeded with policies that directly contradicted government policy. Among other things, DAF instituted its own training courses in a number of firms, claiming also the exclusive right to award industrial qualifications (Seubert 1977: 104). It also opposed the Economic Ministry's (1938) introduction of nationwide apprentice lists (*reichseinheitliche gewerbliche Lehrlingsrolle*), preferring instead to maintain its own apprentice rolls outside the chamber system. Finally, DAF and AfBB (as Dinta was now called) interfered with chamber-based examination

³¹ Arnhold was in an overall ambiguous position; Ley too remained suspicious of Dinta because of its links to industry, and sometimes accused the organization of putting the ties to industry above the ties to the DAF (Frese 1991: 253-54).

procedures in a number of ways, attempting to require that DAF be represented on the examination boards and even at one point developing its own testing system separate from the chambers.

Through all these jurisdictional conflicts, industry rallied behind the RWM under Schacht, who consistently represented the interests of organized business and sought to protect the rights of the chambers to administer key aspects of the training system (Frese 1991: 259, 262). For his own sake but also at the urging of "influential firms" who wanted the situation clarified in their interest, Schacht issued an official decree that plant-based vocational training should be based on DATSCH materials. He instructed the chambers not to test apprentices who were registered on the competing DAF rolls, and insisted on the sole right to testing through the Industry and Trade Chambers (Frese 1991: 297-302; Kipp 1990: 229; Schneider 1999: 364-65; Seubert 1977: 110). In all of this, the Reichsgruppe Industrie (RGI) offered Schacht "massive support," advising firms to stay away from AfBB and DAF, and exhorting them instead to implement the policies of the Economics Ministry so as not to put their own role in training in jeopardy (Frese 1991: 261, 272-73, 298 fn143).

The transition that had occurred, especially among the former segmentalists, must be underscored. Heavy industry was decidedly unenthusiastic about registering their apprentices with the Industry and Trade Chambers (IHK), about adopting standardized apprentice contracts, and about subjecting their apprentice contracts and conditions to review through the IHK. Over time, however, these firms came around. As Frese puts it, "the activities of the DAF [in this area...] strengthened the willingness of these firms to change their attitude" (Frese 1991: 272). In other words, the firms that had resisted collectivist solutions in the Weimar years faced a completely different choice set under the Nazis. It was no longer a question of

whether the social democratic unions would have to be accommodated; this had been resolved in employers' favor with the repression. But it was also no longer a question of what type of training system to adopt (collectivist or segmentalist/autarkic). A collectivist system existed and the issue was whether organized business or the Party would dominate within it. The elimination of unions facilitated greater employer unity on this question by eliminating one of the sources of disagreement among them in the Weimar years, while the intrusive incursions of DAF into treasured areas of managerial prerogatives pushed them toward greater unity to defend business self-government.

The conflicts between the RWM and the DAF were never fully resolved in the sense of a clear and unambiguous delegation of authority (Wolsing 1980: 308), but over time the DAF's position in training policy was weakened both by the actions of firms themselves (also involving a great deal of shirking and foot-dragging), and the onset of war, which encouraged the regime to adopt an increasingly pragmatic and instrumental approach to training. Thus, as the war economy geared up, "duplication of work" in the area of vocational training was increasingly dismantled to the benefit of the Reich Ministry of Economics" (Greinert 1994: 46; also Kipp and Miller-Kipp 1990: 34). In May 1941, the DAF's Office for Vocational Training and Plant Management was itself merged into the (DATSCH-successor) Reichsinstitut für Berufsausbildung, thus formally subordinate to the Economics ministry (Stratmann and Schlösser 1990: 47-49; Greinert 1994: 47).

By 1942-1943 vocational training had deteriorated significantly, as trade schools were closed and as training became narrower and mostly degenerated into production work for the military. However, the legacy that would remain, and have a profound impact on postwar developments was that of unified national system for

apprenticeship training that had been explicitly built out from handicraft model but that had superseded the old model by incorporating and applying the technical/organizational innovations that had been developed in the 1920s. The crucial legacy was partly a matter of direct design and Nazi policy, but equally important for its revival and durability in the postwar period were the effects of the politics of training policy under the Nazis – for it was under the banner of employer self-regulation (against the state) that resonated with the occupying powers in a way that allowed vocational training policy to be reconstructed along much the same lines in the postwar period.

Vocational Training in Postwar Germany

The West German vocational training system was reconstructed after the Second World War along lines that built directly on pre-existing institutions and practices (Crusius 1982: 89; Taylor 1981: 47).³² During the occupation, to the extent that the military governments sought changes in the German education system, they were interested above all in the *school-based* component of training, the main goal being to expose German youth to a curriculum that included heavier doses of civic responsibility and democratic values (see, e.g., Marshall 1995). Less attention was devoted to a serious consideration of reforms to the system of enterprise-based training itself during the occupation period. Plant-based apprenticeship more or less spontaneously re-surfaced after the war, and recommenced most quickly and thoroughly in the craft sector, as early as 1945 (Taylor 1981: 131). Given widespread destruction of major industrial areas, apprentices in large industrial firms were advised to figure out for themselves how to finish their training. In many cases this

meant turning to the craft sector, since artisanal firms were flush with orders connected with repair- and reconstruction work of all varieties (Pätzold 1991: 2-3). However, industry too contributed to the revival of enterprise-based training as soon as feasible, and plant-based training was re-instituted more or less "automatically" under the auspices of individual firms and their employers organizations and chambers (Crusius 1982: 90).

One important reason why in-plant training was swiftly reopened without much fundamental debate stemmed from widespread concerns about youth unemployment in the immediate postwar years. The working population in Germany just after the war was overall on the older side due to war casualties. At the same time, however, Nazi population policy was making itself felt on the labor market within just a few years after the war, so that youth unemployment soon became a major political concern.³³ Apprenticeship provided a structure for German youth, and thus addressed concerns on the part of the Western Allies, especially as the Cold War began, that hopelessness and disillusionment would make German youth susceptible to the influence of political movements not just on the Right but on the Left as well (Taylor 1981: 30). German business, always looking for ways to rehabilitate itself in this period, could bill itself as making efforts to deal with this problem by re-establishing apprentice training programs quickly and unbureaucratically (BDI 1950; Crusius 1982: 90-91; Pätzold 1991: 2; Rohlfing 1949: 3-4). Already in October 1950 the Ministry of Labor reported 1,011,805 registered apprentices (in industry and Handwerk) (Arbeit 1950: 30).

³² East Germany is another story, one that cannot be told here; but see (Jacoby 2000; Culpepper 2003).

³³ In 1948 the number of school leavers was 600,000, and by a year later this was up to 750,000. The trend continued for the next several years, and peaked in 1955 at 880,000 before dropping off rather quickly thereafter (Taylor 1981: 126).

The fact of apprenticeship brought with it of course the issue of regulation and oversight, and here again employer and handicraft associations re-emerged and assumed their traditional roles somewhat organically and Abel puts it, "in the absence of the state" (Abel 1962: 32; Crusius 1982: 89-91). All three occupying powers had their doubts about the separation of technical and vocational education from general education, and also about having the former under the control and dominance of employers. At the same time, however, the Allies were also united in their desire to break up concentrated powers of the state and to establish decentralized nodes of authority, and so in this context the re-establishment of business self-government looked like a viable alternative. Employer representatives emphasized wherever possible the ways in which their interests resonated with the values of the occupying powers (particularly the Americans), underscoring the role that private capital and employer self-government could play in limiting state power and guarding against a return of authoritarianism (Herrigel 2000: 377). The head of the DIHT department for vocational training, Adolf Kieslinger (a man who had occupied basically the same position in the late Weimar and then also Nazi periods) never tired of insisting that "vocational training is not the task of the state" (*die Berufsausbildung ist nicht Staatsaufgabe*) (Kieslinger 1950: 146).

The occupying forces did not stand in the way of the chambers resuming a leading role and significant responsibility in these areas, and indeed they promoted these developments (Greinert 1994: 50). Handwerk faced the interesting challenge of wanting very much to preserve some of the gains (e.g., the major certificate of competency) that they had sought for decades but only achieved under the Nazis (Ullmann 1988: 255-56). This involved convincing the occupying powers that these practices were actually based on a long Handwerk tradition rather than national-

socialist principles, a line of argumentation that proved mostly successful. Thus, already in the fall of 1945 the Handwerk chambers were working in accordance with the old Handwerk law, and by 1946 this role was recognized by the military governments either de jure (France and Britain) or de facto (American zone) (Rohlfing 1949: 12; Richter 1950: 53; Ullmann 1988: 256-57).

In industry, the allies had an interest in the "quick reactivation" of the Industry and Trade Chambers since they needed them to act as intermediaries between military administration and companies in rationing measures (Ullmann 1988: 238). In the British and French zones the chambers were up and running in 1945 and officially reconstituted along old lines in 1946 and 1947 (Ullmann 1988: 238). In the American zone the chambers were allowed to reconstitute themselves as private institutions with voluntary membership and without any official parapublic responsibilities; however, the latter provision was almost immediately softened again to allow the chambers to resume traditional functions in the area of apprentice training (Richter 1950: 55-56; Ullmann 1988: 238). The ambiguous legal basis for chamber activity in this area did not stop the chambers from picking up their previous functions in the area of oversight and supervision of in-plant training (Richter 1950: 45; Stemme 1955: 5). Central coordination was provided for through the creation (by the chambers) of a national-level "Arbeitsstelle für Berufliche Bildung, or ABB), that saw its role as a direct continuation of the work of DATSCH and its Nazi-era successor, the Reichsinstitut für Berufsausbildung (Kieslinger 1960: esp. 45-57).

By the time of the founding of the Federal Republic (1949) and the installation of its first government under the conservative Chancellor Konrad Adenauer, the enterprise-based part of the dual system had been re-established on the basis of employer self-governance, albeit with distant supporting roles assigned to both the

state and the unions.³⁴ The main debates of the 1950s and 1960s regarding plant-based training all turned on the same basic line of cleavage. Employers and their political allies defended the principle of employer self-governance (and the subsidiarity principle³⁵) as the only viable way to prevent bureaucratization and to preserve the "elasticity" of the system in the face of changing market and technical conditions (Adam 1979: 163; Baethge 1970: 179-183; Kell 1970: 239-40; Kieslinger 1966: 57ff). Unions and their political allies, by contrast, defined vocational training as a "public task" which therefore required more democratic control and increased participation rights for employee representatives. (Crusius 1970: 115, 127; Baethge 1970: 98f).

For present purposes, however, what is in many ways as striking as the areas of conflict were the many areas of agreement, noticeable above all in what was *not* controversial. One feature that stands out in a comparative perspective, for example, is organized labor's continued support for the basic framework of the dual system, including the clear subordination of the school-based component to the plant-based portion of training. Indeed, the German Trade Union confederation specifically endorsed this feature arguing that "there can be no question that the firm has to fulfill the primary and the trade school a secondary task in vocational training (from a 1955 publication of the trade union confederation quoted in Stratmann and Schlösser 1990). Such consensus should not be taken for granted. A 1952 Report submitted to the American High Commissioner on Germany, for example, had specifically criticized the German training system as overly grounded in an economic rather than an

³⁴ The chambers were required to submit training profiles to the relevant ministry for approval, and (based on practices developed in the British zone and later generalized) the process of approval included review by union representatives.

³⁵ The idea being that the state could only intervene when business and their self-government institutions were not fulfilling their tasks satisfactorily (Lipsmeier 1998: 450).

educational logic, and noted that German business appeared to rely rather heavily on the "cheap" productive labor of apprentices (Stratmann and Schlösser 1990: 64; Ware 1952: 45-47). However, far from picking up on such critiques, German unions if anything joined with industry representatives in the rather spirited defense of the value of plant-based training and warned against vocational education becoming overly "bookish" (*Verschulung*) (Stratmann and Schlösser 1990: chapter 4, 67-68; Abel 1968: 21-23, 33; Baethge 1970: 170-73; Crusius 1982: 91ff).³⁶

Josef Leimig, the representative in charge of vocational training for the national German Trade Union Confederation (DGB) was completely convinced of the value of firm-based training (Stratmann and Schlösser 1990: 61-62). Like other union functionaries having responsibilities in this area – and who had had earned their own credentials in the system -- Leimig had a "traditional understanding" of the concept of a skilled vocation (*Beruf*) (Crusius 1982: 89). Thus, while the unions sought significant reforms in terms of the regulatory structure of the vocational training system, in fact they continued to support key aspects of the dual system – including and above all, the merits of in-plant training, in whose reconstruction they themselves had played a role in the immediate postwar years (Abel 1963: 33; Crusius 1982: 89, 90-92, ; Baethge 1970: 170-73). Rather than call for a complete overhaul of the country's training system, unions instead returned to demands they had first articulated in 1919, fixing their hopes on legislation to guarantee organized labor full parity codetermination rights within the system (Crusius 1982: 90) -- and while they

³⁶ Of course the unions were calling for changes, but their demands for a vocational training law and increased state oversight were pitched at the level of governance and regulation, not the core framework of plant-based training itself. As Crusius notes, unions too may have held back from demands for more significant changes in the 1940s and early 1950s due to acute apprenticeship gaps. They only began pressing these points later when full employment was restored (Crusius 1982: 115).

waited and lobbied for overarching legislation on codetermination, the system of in-plant training under chamber auspices was simply rebuilt.

The political climate in the 1950s was in any event not auspicious for the chances of major reforms in the direction of full codetermination rights for labor in vocational training at the national level. The policies of the conservative government of the 1950s mostly endorsed, consolidated, and confirmed the principle of employer self-governance in vocational training -- assigning responsibility for oversight and administration of apprenticeship to the employer chambers. However, new provisions required employee representation and participation in chamber deliberations and decision-making on these issues. The important legislation of this period (for the handicraft sector, the 1953 *Handwerksordnung*, or HwO and for industry, the 1956 *Gesetz zur vorläufigen Regelung des Rechts der Industrie- und Handelskammern (IHKG)*) defined the activities of the chambers in vocational training as "public" and official and therefore subject to some state supervision and labor participation, while delegating the important supervisory and oversight functions to the chambers (Richter 1968: 29; Engel and Rosenthal 1970: 4).

The legal framework for vocational training remained a point of contention however, and window for reform opened in 1966 when the Social Democratic Party (SPD) joined the government for the first time in the postwar period, as part of a "Grand Coalition" with the Christian Democratic Party (CDU). At this point, the SPD made its own formal proposal for a vocational training law, which forced the CDU to respond in kind and set in motion a legislative process that would culminate in a new framing law, the 1969 Vocational Training Law (*Berufsbildungsgesetz. BBiG*) (Lipsmeier 1998: 449). An essential element of the reform was to put the system (which until then had been under the laws governing the chambers--*Kammerrecht*)

under the auspices of national legislation. The new law brought greater unity to the previously disparate legal framework governing apprentice training, and it also gave unions a stronger voice in the overarching regulatory functions surrounding the definition and elaboration of training regulations and occupational certifications.

Key administrative and supervisory functions, however, remained with the chambers, which still served (and serve) as the main interface between the federally established guidelines and the training firms themselves. Although unions enjoy representation rights in the chamber committees on vocational training, there are also limits to the role they play there – through the provisions that require policy changes affecting financing to come before the chamber's full assembly (effectively, an employer veto point since unions have no representation there), and through the chambers' rights to monitor in-plant training and to approve firms that wish to train as being competent to do so.³⁷ However, despite ongoing complaints about inadequate representation and powers within the system, mostly organized labor has since this time operated as a partner with business in shoring up the system through ongoing renegotiation of the content and character of in-plant training within the parameters laid out under the 1969 legislation. The biggest conflicts in the 1970s were over financing arrangements, and stemmed mostly from worries about a decline in firm based training and were linked to labor's efforts to get employers to do more of it.

While these conflicts have never completely subsided, the 1980s were mostly characterized by a high degree of cooperation between unions and employers in the context of the existing system in the interest of adapting the content and structure of

³⁷ There are some issues that are partially covered in the 1972 Works Constitution Act, and the new (2001) Works Constitution Act provides additional levers (see discussion below). However, mostly works councils have information and consultative rights, and the extent to which this translates into real influence depends on the initiative and strength of the plant labor representatives themselves (Schömann 2001: 17).

training to changing market conditions. A good example of this is the complete revamping of the occupational profiles of the entire metalworking industry by the union and employers – which was accomplished in 1984 in a completely consensual manner despite the fact that this took place against the backdrop of the biggest strike in that industry in the postwar period. As Streeck et al. note, the sometimes conflictual rhetoric should not obscure the deep commitment of both employers and unions to the vocational training system: "trade unions and employers are far apart when it comes to the question of how training should be financed and to what extent individual employers providing training should be subject to external supervision...But the public debate hides the fact that neither side doubts that each school leaver should have access to high quality vocational training and that training profiles should be continually upgraded and modernized. While both sides find the existing system wanting in important respects, neither finds it wanting enough to be willing to let it fall into disuse or decay" (Streeck et al. 1987: 3-4).

The point in the present context is that by the 1980s organized labor had become a full and fully engaged partner in the German vocational training system, thus completing also a long process of institutional conversion that transformed institutions originally designed (in the 1890s) to defeat organized labor into institutional pillars of a particular, and in some ways of a particularly strong, variety of social partnership a hundred years later. This is not the end of the empirical story, of course, but it is perhaps a good point at which to return to some of the theoretical issues sketched out at the beginning of this paper and to which the case of German vocational training seems well suited to speak.

Conclusions (A Sketch at this point)

A single case study of this sort cannot, of course, provide a rigorous test of competing theories of institutional reproduction and change. However, the case of the German vocational training regime does, I think, offer insights into three broad themes in the literature on institutions generally, having to do with issues of (1) institutional design, (2) institutional reproduction, and (3) institutional change. The conclusion will deal with each of these points in turn.

(1) Institutional design and institutional effects.

The first and most obvious point is that this case study underscores Robert Bates' cautionary note not to "confound the analysis of the role of institutions with a theory of their causes" (Bates 1988; see also Knight 1999:33-34). It serves as a strong warning against varieties of what Pierson calls actor-centered functionalism that engage in a kind of backward deduction and in which "the effects of the institutions [are taken to] explain the presence of those institutions" (Pierson 2003; Pierson 2000b: 475). Looking at German vocational training institutions from today's vantage point, analysts quite reasonably portray this system as part of a high-wage, high-quality production regime that reconciles the existence of strong unions with strong performance in export markets. However, as the history shows, this was not the obvious endpoint of a trajectory that could have been foreseen in the late nineteenth century.

As Pierson notes, the point is not that institutions are not designed by purposive actors with particular interests; clearly they are.³⁸ The point, rather, is that "changes in the broader social environment and/or in the character of the actors

themselves" (among other things) can, over time, produce a significant and unintended "gap" between the goals of the designers and the way institutions operate (Pierson 2003: 8). Since many of the formal institutions we are interested in will have survived long stretches of time, the analysis of institutional design will have to be complemented with greater attention to questions of institutional development, something that suggests the need to incorporate a somewhat stronger temporal dimension into the analysis (see, especially, Pierson forthcoming; also Orren and Skowronek 1994).

In line with some current theorizing about path dependence in politics, we need to be sensitive to the possibility of what Stinchcombe has termed "historicist explanations," that is, the idea that the "processes responsible for the genesis of an institution are different from the processes responsible for the reproduction of the institution" (Mahoney 2000: 4; Stinchcombe 1968; Pierson 2000a). Against functionalist accounts that read the origins of institutions off their current functions, a somewhat longer time frame will often be necessary for us to see how institutions created for one set of purposes can be redirected to serve quite different ends. Alongside power-distributional accounts that stress how the powerful design institutions to anchor their position, we often need a longer time frame to see how institutions created by one configuration of power or coalition of interests can be "carried forward" on the shoulders of some other coalition entirely. And beyond some cultural accounts that see institutions as faithfully reflecting shared cultural scripts, a longer time frame may allow us to see more clearly how institutions created at one juncture can be constitutive and not just reflective of a particular social or cultural orientation. The point in each case is that the creation and existence of the

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Although as Schickler, Palier, Pierson and others have pointed out, institutions also often represent

institution at one juncture can have a formative impact on actor strategies, interests, identities, and orientations subsequently.

Refuting accounts based on a "snapshot" view of institutions (Pierson) is often tricky because if one were to take some slice of time out of the history I have just sketched out, you are likely to find a system whose main features are consistent in important ways with the expressed interests of the relevant and most powerful actors. However, as Huber and Stephens have pointed out in another context, analyses based on small slices of time are likely to miss entirely the way in which past policy has shaped who these actors are, how they define their interests, and what strategies are realistically available to them at any particular juncture (Huber and Stephens 2001: 33; Hacker and Pierson 2002). In the case of German training, for example, the existence of a system for certifying skills in the handicraft sector was enormously important in causing skill-intensive industries to define and articulate their demands in a way that was consistent with the logic of a system not of their creation – and this was in fact crucial to the defeat of an alternative (segmentalist) model that was present in Germany at the time and that prevailed in many other countries. Even more striking is the impact of this system on the way that labor unions were constituted and especially the way in which they defined their interests with respect to skill. This leads me to a consideration of questions of institutional reproduction and change.

(2) Institutional reproduction.

The case of German vocational training institutions is also a good one for probing the limits of existing theories of institutional reproduction and change, for as we have seen, core aspects of the system not only survived but sometimes

experienced consolidation and reinforcement in the context of historic "break points." Contrary to some accounts, it seems that political actors do not necessarily seize on these moments of relative "openness" to engage in creative experimentation, but rather do just the opposite and cling (to the extent possible) to familiar institutional routines and organizational forms.

However, as we have also seen, institutional survival in this case was strongly laced with elements of institutional adaptation as the form and functions of these institutions underwent successive waves of renegotiation to bring them in line with changing social, political, and economic conditions. In fact, a central message of this paper is that institutional reproduction is a much more problematic concept than typically recognized (Thelen 1999). "Inertia" and "stasis" are particularly misleading notions when it comes to explaining institutional stability, for what we find here is that in order to survive, institutions can rarely just "stand still." Their survival is guaranteed not by their "stickiness" but by their ongoing adaptation to changes in the political and political economic environment.³⁹

The idea of conceptualizing institutional reproduction as a dynamic not static process is well developed in the literature on policy feedback (Pierson 1993; Krasner 1988; Skocpol 1992). That literature has pointed to the ways in which the existence of institutions generates behaviors and strategies (also beyond the boundaries of the institutions themselves) in ways that reinforce these institutions. For example, and as I have argued, the existence of the Handicraft system and the fact

³⁹ If it is true, as I am arguing, that institutional survival over long stretches of time often involves elements of adaptation and change, then the converse is also true. That is, institutions that are not actively updated and fitted to changes in the political and market environment can be subject to a process of erosion through what Jacob Hacker has called "drift" (Hacker 2003). I don't have space to develop the point here, but it may be that the German vocational training system is currently in just such a state of drift. What we now see is that – after surviving several massive historic breaks – the foundations of the system are being undermined through gradual long-term processes

that social democratic unions organized large numbers of workers certified under this system stabilized that system in some ways -- by encouraging labor to define its interests within the logic of the system (as opposed to against it). Employing Greif and Laitin's terms (Greif and Laitin 2003), this could be characterized as a situation in which the operation of these institutions produced behavioral effects that expanded the "quasi parameters" within which the institution was self-enforcing.⁴⁰

However, saying that labor unions (or we could also make the argument for the machine industry) came to frame their interests in relation to the existing system is not the same as saying that these groups were invested in those institutions *as constituted*. Here we leave the realm of positive feedback arguments and also quasi-parameters, and enter the realm of institutional change. The question, in other words, becomes the extent to which the operation of these institutions themselves generate only positive feedback or whether these dynamics also generate contradictions or challenges that then complicate rather than contribute to the "*reliable* reproduction" of these arrangements (Clemens and Cook 1999: 449; on this general point, see also Orren and Skowronek 1994).

(3) Institutional Change:

Thus, finally, the case of German vocational training sheds light on important sources of pressure for institutional change, as well as on modes of institutional change through incremental adaptations rather than breakdown. In terms of the sources of (or pressures for) change, the present analysis underscores the insight of Clemens and others that studies of institutional development need to be attuned to

affecting the overall structure of the economy, with implications for the intensity of employer interests in this system and for their capacity and willingness to collectively defend it.

processes unfolding on the periphery (Clemens 1993; Orren and Skowronek 1994; Weir 1992). This is because institutions do not just generate positive feedback, they also "generate grievance...[and] actors who are aggrieved but not co-opted are an important source of pressure for institutional change" (Schneiberg and Clemens forthcoming). In the present analysis, the most important initiators of change were precisely those that were "outside" the vocational training system as originally constituted (for the artisanal sector). This goes, above all, for skill-intensive industries (particularly the machine building industry) and labor –both of whose strategies in some ways adapted to the logic of the existing system while in other ways presenting a frontal challenge to it.

The skill-intensive machine builders who despised the "unsystematic" training of the artisanal sector became obsessed with securing the right to certify skills, a right that the Handwerk sector monopolized and that these firms coveted. Through a process of what Schickler has called "institutional layering" they developed strategies and institutions *alongside* and in interaction with the pre-existing artisanal system. As Schickler suggests, this kind of layering does not always push developments further along in the same direction (as in increasing returns arguments). In the case of Germany, such layering clearly altered the overall trajectory of vocational training—pushing it away from the decentralization and lack of systematic and uniform skill profiles characteristic of the Handwerk model, toward the high degree of standardization and uniformity that are now considered hallmarks and defining features of the system.

In the case of labor, we see a somewhat different mode of change. I think of this second mode as a kind of "conversion" process. Such a process can be set in

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Their point is that the operation of an institution can generate behaviors that either increase or

motion by a shift in the environment that confronts actors with new problems that they address by using existing institutions in novel ways (examples are provided in Thelen 2002). Or, as in this case, it can be a consequence of the incorporation of new groups, previously on the margins, whose participation drives an important change in the functions these institutions serve or the role they perform. In any event, the modes of change observed in this case study -- through layering, through conversion -- are quite different from punctuated equilibrium models that draw a strong line between the analysis and dynamics of institutional stability and that of change. However, it may be that they capture better the kind of incremental or bounded change that constitute the more common way that things "work" in politics.

In sum and taken as a whole, the case of German vocational training institutions can be seen as an instance of institutional resilience and change that combines elements of increasing returns with new developments that did not necessarily always push in the same direction but rather altered the overall trajectory. The case suggests that for an institution to survive major socioeconomic transformation (industrialization, democratization) or political disjuncture (regime change, conquest, occupation), the story of institutional reproduction may well be strongly laced with elements of transformation. For this reason, institutions such as this will often neither accurately reflect the "congealed tastes" of their creators (Riker 1980), nor simply continue to mirror the power distribution at the moment of their creation (Knight 1992). As this case makes clear, one can make sense of the form and functions these institutions have taken only by viewing them, as Pierson and Skocpol recommend, in the context of a larger temporal framework that includes the sequences of events and processes that shaped their development over time.

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