Identity, Procedural Knowledge, and Institutions: Functional and Historical Explanations for Institutional Change

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It is proved, he used to say, that things cannot be other than they are, for since everything was made for a purpose, it follows that everything is made for the best purpose. Observe: our noses were made to carry spectacles; so we have spectacles. Legs were clearly intended for breeches, and we wear them. Stones were meant for carving and for building houses, and that is why my lord has a most beautiful house; for the greatest baron in Westphalia ought to have the noblest residence. And since pigs were made to be eaten, we eat pork all year around. It follows that those who maintain that all is right talk nonsense; they ought to say, all is for the best.

_Pangloss to his Lord from Voltaire's Candide_

One of the central themes that cuts across Professor Karl W. Deutsch's work, be it on nation-building or the cybernetics of government, was an insistence on understanding societies as systems.¹ This systems approach remains a deep challenge to efforts to understand the transition of socialist economies and the comparative economics of national institutions. A similar systemic approach is the core of the accounts by Masahiko Aoki for Japan or David Soskice for Germany which explain economic performance as the outcome

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of a finely tuned equilibrium among financial, corporate, and labor institutions. The components of these systems function to generate incentives for individual actors to coordinate their economic decisions and activities. The functional argument is implicit in the recent burgeoning of the literature on complementarities which posits that systems move towards (local) optimal configurations through marginal adjustments to interacting components.

Complementarities are rarely identified a priori. This observation points to the core of my argument that the ambiguity of what fits with what provides an intrinsically interesting insight into the difficulty of organizational and institutional change. However, even if complements are difficult abstractly to identify, there are two criteria that complements should satisfy. The first is the criterion of economy in incentives that governs the interactions between institutional components. In this formulation, financial markets exist "in order to" curtail managerial discretion; employer associations eliminate the dangers of underinvestment in human capital through free riding. The second criterion is that of closing the system such that, if financial markets are seen as providing incentives to managers and managers act to invest in human capital, there are also mechanisms that insures the incentives for financial agents to monitor and sanction bad management.

One can think of these complements then as a coordination problem, with corresponding high and low equilibria (Finegold/Soskice 1988). Germany, for example, is often considered to represent a high equilibrium, because it resolves a fundamental problem inherent in a high skill economy, namely, creating the incentives for individuals to invest in their human capital by providing credible promises of future employment at wages to justify the investment (Streeck 1992; Soskice 1990). Works councils act to adjudicate between workers and managers; unions can make binding wage agreements; employer associations prevent individual firms from poaching workers, thus decreasing the attractiveness of any firm to invest in particular workers. The success of the German economy can be insightfully described as shifting a potential prisoner dilemma situation to a coordination problem. That is, instead of a situation in which expectations that employers will not respect the high wage commitment leads to workers refusing to invest in future earnings, the institutions provide a cooperative context in which works councils and unions function in order to support the source of German productivity, namely, the high skills earned by apprenticeship and training.

These are powerful arguments that provide an analytical framing of the comparative merits of different national systems. However, I want to make a simple case against them, namely that these arguments do not help to explain institutional change. In times of institutional change, the analysis shifts from corporatist actors to the beliefs held by individuals. In those circumstances, the (mainly tacit) procedural knowledge that underpins coordinated markets cannot be assumed, since individuals abandon the non-reflexive routines that push them to obey normatively prescribed behavior. Institutional change thus raises the question how common sense notions of coordinated action are achieved.

This essay begins by ruling out one kind of argument that appears useful in static functional formulations of institutions, namely, the implicit use of backward induction. Instead, I argue for the notion of procedural knowledge as guiding the behavior of individuals in particular historical settings and as the underpinning of coordinated action. This knowledge is indexical insofar that historically given identities unite the procedural knowledge of individuals with the classifications of work that define the division of labor. These ideas are illustrated through an examination of the change in work practices in Weimar Germany. The paper ends with a short discussion of why behavioral change in eastern Germany is not achieved through the installation of western German institutions.

Institutions as a Coasian Problem

The difficulty with a systems approach is in the integration of the system description with the action of individuals. This integration is often achieved, I think with great power and effect, by trying to understand systems, such as nations, as generating incentives for people to behave in particular ways. For example, in Germany the labor market pays people with respect to their educational qualifications. Thus, there is an incentive in the form of future higher wages for people to educate themselves and postpone higher salaries until later. Now all of this makes sense if firms create a pay policy that respects these labor institutions. Hence there has to be a set of incentives that prevents firms from poaching, and there must also be strong centralized unions that can impose wage restraint through potential sanctions. It is easy to see how this line of thinking generates a system, in which labor, firms, finance, and government are all interlocked in a closed cycle. The system is closed through the functional coupling of complementary institutions. If you pull an element out, the whole apparatus wobbles.

The obvious advantage of having a nose to support spectacles is the source of the often posed question why societies do not reconstitute themselves to realize Pareto improvements. The Coasian bargain fundamentally says that in the absence of prohibitive transaction costs, parties should be able to negotiate and contract the allocation of property rights to provide incentives for mutual gain. To state the point of Douglass North (1990) that transaction costs have been prohibitively high in some historical periods and in some societies misses the point that the Coasian bargain should also permit the redesign of the institutions that govern property rights.

Functional and Evolutionary Arguments

Thus, the central perplexity raised by these functional descriptions of national systems is the puzzle why should low equilibrium societies not switch to better coordinated economies. In fact, the academic debate is principled, at
least implicitly, on the presumption that given the appropriate institutions, powerful and organized economic interests (e.g., business and labor) should negotiate along an efficient frontier; distributive bargaining should not upset the efficient allocation of investment in human skills and capital. But if some distributional outcomes in this higher equilibrium system should dominate the best payments to each party in a low equilibrium system, then the Coasian argument implies that institutions should be re-contracted. But they are not.

There are, no doubt, several ways to construct an argument why institutional change is less likely to be subjected to the considerations of Coasian bargaining. There is one approach that, however, should be ruled out, namely, the Panglossian functionalism that is so useful as a description of static systems. As a system characterization, functional arguments are useful descriptions of why particular elements coalesce in a coherent (i.e., complementary) system. Historical moments of institutional change, however, are not characterized by the functional "in order to" reasoning implied by a systemic approach.

To argue that parties to a reconstitution of institutions act in order to arrive at a high equilibrium outcome is subject to at least two problems. This approach implies a high level of rationality and knowledge over the outcomes of complex interactions among institutions. If there are ten institutions which compose a system (e.g., centralized unions, works councils, central banks, employer associations, banking finance, etc.), we quickly arrive at 2^10 or 1024 outcomes. This calculation assumes that these ten institutions can be identified and that there is enough variety in the world to infer positive complements. It is not surprising that the combination of complexity and the scarcity of natural experiments represents an unresolved challenge to comparative methods (see, for example, Regin 1987).

More importantly, functional arguments stipulate a circularity in which backward induction determines the belief set held by individuals at the time of institutional re-contracting. As Elster (1983) powerfully notes, the only escape from this circularity is to state the functional argument in terms of intended and unintended consequences. More simply, the presumption is that actors bargain to achieve some local consequence, with the system consequence that they achieve an outcome that was not intended. This constraint on the argument requires that the beliefs of the actors need to be stated empirically (or what in sociology is called "indexically") rather than as induced from the functional outcomes.

An excellent historical example is the origin of works councils. Works councils were created in the revolutionary period of 1919 as a way to enforce worker control over the workplace. One of their unintended consequences was that by the end of the 1920s they permitted a high degree of coordination among workers and employers (see Plume 1994). The Weimar Republic was therefore a remarkable period in which the principle institutions that guided the West German economic miracle were created; but they were not created with the functional merits of the postwar coordinated market economy as a goal.

There is a distinction between the historical process as guided by a functional logic of "in order to" and the evolutionary logic of "because of." To restate the point, works councils were not created in order to function in conjunction with other institutions to achieve a highly coordinated economy. But because they were created, the German system evolved a necessary component in the functioning of a high equilibrium economy.

Institutional Imitation

This distinction between historical arguments and functional analysis may seem irrelevant to a debate that asks whether national systems may not learn from each other. Let us, for the sake of argument, assume that decision-makers in reputedly low equilibrium economies, e.g., the United Kingdom, hold an accurate understanding of the functional components of high equilibrium national systems. Given the demonstration effect of superior German institutions, the United Kingdom parties could convene themselves in a constitutional meeting to re-contract their social and political arrangements. The United Kingdom could become German in all but territory and national identity.

This thought experiment runs into a kind of Goedel recursion insofar that the decision to convene a constitutional meeting is itself subject to the institutional failure that would characterize an uncoordinated market economy in the first place. British labor is not centralized. If we accept for purposes of illustration the argument that the British system is impaired by the inability of unions to commit credibility to wage restraint at the shop level due to the absence of centralized control, then how should they commit credibility to the guarantees required for institutional reform? The recursion is that in the absence of institutions to enforce the process of institutional change, the ability to bootstrap to a higher equilibrium by imitative learning is subject to failure of collective action.

However, this kind of argumentation is prone to the following criticism. If British citizens knew that the German model was superior, they should achieve the Coasian re-contracting by which, first, unions are centralized and then central actors agree to reconstitute national institutions. This criticism is not petty insofar as it points out that corporate actors are analytical fictions. The analytical convenience of corporatist arguments of assuming stable organized interests is obviously not valid if the question shifts to what sustains the longevity of institutions. Considerations of institutional change.

2 Ostrom (1990) suggests certain principles by which communities may self-organize to achieve cooperation even in the absence of constitutional guarantees. But in communities in which these principles are missing, her argument implies low equilibrium as a stable attractor state.
force a change in the level of analysis to the decisions of individuals. For whatever historical reasons, German and British workers were organized into centralized and decentralized bargaining institutions. If these institutions no longer correspond to their preferences, then they should in democratic societies vote by exit, voice, or ballot.3

Let us proceed with a few considerations by both staying within the framework of rational choice and admitting its validity. First, it could well be that individuals prefer to persist in familiar paths rather than shift, due either to habit or to uncertainty over compensation. However, if the costs of institutional persistence are large enough, they should at some point change. This observation is simply a generalization of North and Thomas’ (1973) argument that changes in the relative prices of land and labor caused the break up of feudalism in western Europe.4

Second, individuals may lack knowledge over alternatives. This consideration is historically possible, but analytically not useful unless we allow some individuals to be informed. Boyer and Orléan (1991) effectively model this case by showing that if individuals who are informed can interact, then the new institutions can replicate and diffuse to alter existing institutions. Of course, there are many reasons why institutions may not change, especially those derived from the failure of collective action. But if there is gold in reconstructing, then the Boyer-Orléan model simply says that people should at local levels self-organize to institute local change.

Somehow, the difficulties of institutional change are not adequately reflected in the stylized models by which individuals should strike the Coasian bargain. To underscore the intuition that something is missing, consider the experiment whether the United Kingdom would operate effectively better if it adopted German institutions. To a certain extent, this experiment has been tried in the federal states that formerly comprised the German Democratic Republic. By September 1990, West German law dismantled the remaining institutions in the eastern states, and Germany was united under the same constitutional and institutional guarantees for the entire territory. The economic consequences of this experiment have not been encouraging.

Incentives and Coordination

If we reflect on the problems in eastern Germany, it seems obvious that the problem is only secondarily an issue of incentives that are given by a set of complementary institutions. Rather, the problem of institutional change is connected with the acquisition of the “procedural knowledge” that supports the coordination of work. To understand what procedural knowledge is, I would like first to explain why coordination is not an incentive problem.

Consider the experiment defined by the prisoner’s dilemma game. The idea of this game is to show that cooperation does not occur (even when in the interests of two parties) if there are conflicting incentives. This failure to cooperate is a breakdown of collective action, and therefore it is important because it suggests that cooperation to create institutions that benefit all players may yet be hard to accomplish.

This game has been the subject of an immense body of work. Its name comes from the description given by Tucker of operations research fame, who created the image of two criminals caught red-handed. The two prisoners are separated, and they face the choice of remaining silent or of cooperating with authorities. The best outcome for each individual is to cooperate as long as the other is silent; the worst is to remain silent when the other cooperates. The equilibrium is mutual defection. In repeated play, however, cooperation can be expected in finite settings, as long as there is some reasonable chance of cooperation in the final round.

It is interesting to take a glance at the notes taken by players to the game during the first time it was held at the Rand Corporation in 1950 (cf. Poundstone 1992). In an experiment designed by Melvin Dressler and Merrill Flood, Armen Alchian and John Williams played a non-cooperative prisoner dilemma game over 100 iterations. The payoffs to the players were not symmetric, for Williams gained more than Alchian through cooperation.

The comments written by the two are quite revealing. For example, Alchian begins by noting that “JW will play D (defect) – sure to win” and immediately adds after round 1 “What is he doing!!” He notes in round 68 that “He won’t share.” Williams, who plays a cooperative strategy of what is now called tit-for-tat, starts by noting “Hope he’s bright” and adds after round 2 “He isn’t but maybe he’ll wise up.” He clearly tries to teach his counterpart, noting “He’s crazy. I’ll teach him the hard way,” “Let him suffer,” “Maybe he’ll be a good boy now,” and “This is like toilet training a child – you have to be very patient.” Both defected at the end of the 100 rounds. Yet, overall, mutual cooperation prevailed 60 out of the 100 times.

The striking aspect of this exchange is the exploration of both parties to communicate a set of rules. A key aspect of their frustration was that their payoffs were not symmetric, Williams gained more by cooperation than Alchian. Alchian thought that Williams should therefore let Alchian defect sometimes to balance out the payoffs. In effect, Alchian was trying to teach his opponent rules of distributive justice using a norm of equality. Williams was operating by rules of procedural justice using a norm of equity in process. Alchian thought Williams was unfair, Williams thought Alchian was either crazy or stupid.

The prisoner dilemma game is a useful, but misleading characterization of what we mean by cooperation that is required for institutions. For in some sense, Alchian and Williams were trying to transform the prisoner

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3 See Peter Hall’s contribution to this volume for an explicit treatment of the political economy of change in Germany.

4 It is an interesting question whether Germany has suffered a shock of relative price change that should induce institutional change. Carlin/Soskice (1997) imply that Germany remains innovative and relatively efficient, but attributes current ills to burden sharing during a period of lower returns to both labor and capital.
dilemma game into a game of coordination. What prevented them from doing this was not simply the issue of conflict in incentives. Rather, their cooperation was hampered by three obstacles: they had different views of distributional fairness; they classified certain actions differently; and they did not develop a cognitive underpinning to their coordination.

In effect, the experiment was an artificial setting in which they were deprived of social knowledge. Game theory experiments, even though they are interesting for the exploration of a certain kind of rationality, deprive individuals of this social knowledge. The location is an artificial setting; the experiments - no matter the number of repeated plays - are of short duration; the subjects know it is an experiment. Yet, behind the constraints of the experimental design, the subjects try to reinstate norms, rules of coordination, and ideas of justice.

Procedural Knowledge and Common Sense Understandings

A fair interpretation of the prisoner dilemma experiment is that, despite the non-cooperative conditions, the players sought to convert the game to one of coordination. Coordination is often considered to be achieved through the use of focal rules. The term focal rules is useful, but it obscures an important issue. A focal rule means, if I am lost in Berlin, and if I am trying to find a friend who is also lost, we might use the rule implicitly to meet at the Brandenburg Gate. There are many clever issues involved in this line of reasoning, but I will only make the observation that coordination very rarely is the problem of finding someone in Berlin. In truth, we solve coordination problems every day. We show up at work and there are meetings with people who slide without reflection in and out of meetings. The only time we become aware of coordination problems is when we are lost, or in a foreign country, or something strange happens, and we cannot rely upon our social knowledge of the situation.

Focal rules are essentially the procedural knowledge held by individuals. Certainly, incentives influence the use of these rules, as well as their acquisition. But in some respects, these are second order effects. The first order effect is that because people hold procedural knowledge, they know how to coordinate.

Coordination is difficult when the procedural knowledge is lacking. Think of this coordination, in its purest form, as a design task. If we are simply doing what we did before, then it is easy to miss the dimension of coordination as difficult. In the United States, we have what is called Levitt towns, in which an entrepreneur Levitt built village after village consisting of identical houses. If construction is slow, it is probable that someone is loafing or not doing his job. But change the task from building houses to building airplanes. Then the challenge of coordination, and knowing what to coordinate, becomes paramount; incentive issues become secondary.

This confusion that all purposive behavior that appears to external observers as non-optimal is because incentives are lacking, is fairly deeply rooted in academic thinking. In an address to the American Financial Association, Michael Jensen noted that American businesses fared poorly in the 1980s despite incentives generated by the tremendous competitive pressures stemming from international in-roads in the home market. His explanation put this fault in the failure of managers to apply capital budgeting tools to maximize the value of the firm.

"Agency theory (the study of the inevitable conflicts of interest that occur when individuals engage in cooperative behavior) has fundamentally changed corporate finance and organization theory, but it has yet to affect substantially research on capital-budgeting procedures. No longer can we assume that managers automatically act in opposition to their own best interests to maximize firm value" (Jensen 1993, p. 870).

Yet, to believe that American executives, who are, if anything, "highly incentivized," failed to respond optimally to international competition due to an incentive problem overlooks simply a more prosaic explanation. The confrontation of American management with radical changes in technology and organization challenged the existing knowledge of how work should be organized and managed. The problem is not that incentives were absent, but the procedural knowledge that guided the organizing principles of many American firms was deficient.

Procedural knowledge is difficult to change, because such knowledge is implicit (Reber 1993). There is considerable psychological evidence that procedural knowledge is hardwired. People learn rules without conscious knowledge of them, and these rules are stored as procedural memory. We may forget the rules of grammar without losing the ability to speak correct sentences. For this reason, a trip abroad is very often an occasion when people think about their own country and its procedural rules.

Procedural knowledge consists, in other words, of the common sense understandings that individuals use in their routine lives. Schutz (1962, p. 339) describes these understandings as "based on a stock of previous experiences of it, our own or those handed down to us by parents or teachers; these experiences in the form of 'knowledge at hand' function as a scheme of reference." Unlike the concept of common knowledge - individuals hold

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5 The appropriate stylization of this coordination problem, as David Soskice has remarked, is the "battle of the sexes" game. Kreps (1990, p. 101) notes that little progress has been made in exploring Schelling's insights on focal rules, and he offers the qualified conclusion that "game theory tells us to ignore... the very keys upon which players coordinate." We are argue below that these keys are the procedural knowledge held by the individuals.

6 This observation has been extensively explored by Garfinkel (1967).
n-tuple calculations of each others' beliefs – common sense knowledge is predicated upon two characteristics: its taken-for-grantedness and its indexical property. By taken-for-granted, it is meant that procedural knowledge operates in implicit memory. It is implicit, because an individual is not conscious of these beliefs in everyday life, but it is not unconscious, because individuals can articulate the belief if prompted. It is indexical, because these beliefs do not generalize, but are valid within historically given contexts.

Identity and Categorization

I wish to make use of this idea of procedural knowledge to suggest that individuals classify the work into divisions of labor which correspond to deeply rooted identities. Procedural knowledge is hard to change because it is rooted in identities that are given by the existing categories defined by the division of labor. Again, we see the importance of understanding this knowledge as indexical, i.e. as rooted in historical identities and conditions.

The process of industrialization was of course quite bitter, especially in Britain. In this process, labor left the land eventually and entered into contract with an owner. This change was accompanied slowly by adjustments in labor law and also by an industrial ideology. Bendix (1956) contended that the need to legitimize authority in these very small factories required an articulation of an ideology. This ideological fight, which eventually became in some countries expressed as class-oriented, was in large part about the identity of the worker with regard to skill, owner, or class.

This debate over identity is echoed in Marx's lament over false consciousness, or Sorel's admonition for a general strike, or in Weber's distinction between class and status. In other words, identity is not given abstractly, but has emerged through a historical process in which the division of labor emerged and evolved. In this more complex expression of the organization of work, we see the emergence of Durkheim's observations on the need for solidarity because there is a division of labor.

Identity has, however, a particular implication which is only now being fully recognized. Namely, there is a very close association between identity, self-classification, and the acquisition of procedural knowledge. The term for this association is "situated learning." It arose from studies by Jean Lave and others about how students learn. It was discovered in the inner city schools of America that students learn much better when the learning is situated in a context with which the students identify. Of course, we have always known this in some regard, and the foundations of apprenticeship programs rest on this belief. But what is frequently missing in our understanding is that knowledge and skill are embodied in identity.7

A powerful way in which the division of labor exercises an influence on the identity of individuals is through categorization. Lakoff (1987) notes that people hold ideal cognitive models that inform their understanding of their world. Whereas logic may apply to the manipulation of symbols within a schema, the reference of these symbols to an external reality is influenced by bodily properties (e.g. color perception) and imaginative processes (e.g. metaphor and metonymy). Borrowing Eleanor Rosch's theory of classification, Lakoff notes that primitives tend to be classified by prototypic effects, i.e. best examples.8 One of Lakoff's examples is that an "unmarried man" is a possible prototype for bachelor; priests and men with three wives when four are allowed would be poor best examples.

To suggest the implications of this thinking, consider the notion of "best practices." Many firms may claim to have installed Japanese production methods; the Toyota system is, however, a best example. Other systems belong to this category, but the prototype is Toyota. The transfer of this system across firms and countries is difficult for many reasons, but a principle reason is that a prototype is not a fixed template. The transfer of just-in-time systems, by argument of metonymy – a part representing a whole – might lead to the classification of adopters as implementing Japanese systems. Moreover, understanding Toyotism or Taylorism as a philosophy leads to the implementation of the spirit of the system, metaphorically. It is not surprising that transfer usually entails innovation, and disagreement as to whether or not it occurred. This observation has profound implications, which can be understood with the help of a historical example of some pertinence to contemporary Germany.

Diffusion and the German Response

The institutional brilliance of the German system was to resolve the ideological conflict in identity by wedding skill and class together through the creation of job classifications that were recognized by owners and managers. It is of paramount importance to underline that identity was at the heart of this institutional structure. Terms such as the distinction between Facharbeiter and gelernte Arbeiter are difficult to maintain in American English, because these social categories did not develop in the American context. There is, in other words, a subtle relationship between identity and the social categories by which work is recognized to be organized.

I want to underline that the change in work flow required changes in the categories by which people assigned responsibilities and status. The proposals of the American engineer Frederick Taylor to change the division of labor caused different reactions in Germany and the United States, because the procedural knowledge and the categories by which coordination was

7 See Van Maanen/Barley (1984) for a discussion of skill and work community.

8 Schutz (1962, pp. 7-9) anticipates this idea in his discussion of typification, or how perception is cognitively classified.
achieved were different. Taylor proposed to alter the division of labor by creating staff experts, by removing knowledge from the shop floor and putting it into the offices of lower management. Similarly, Ford challenged the practical knowledge held by workers and engineers by installing the famous assembly line, in which work was paced by the line and pay no longer had to be tied to individual performance. They both changed the division of labor, and having done so, changed the procedural knowledge at the work place.

At the start of the 1900s, American firms began to invest heavily in Europe, including Germany. Singer, Remington Typewriter, NCR all decimated German competitors through their factories located in Germany and Europe (Blach 1984). A number of German firms openly adopted the American system, one firm even advertised that it produced "nach dem Tayloristischen System" and claimed that both employer and worker gain. (Clearly, it understood the Coasian bargain.) Daimler and Krupp were firms that early on experimented with Taylorism (Kugler 1987).

These American investments were especially poignant because they posed a competitive threat to German exports and even home sales. In this sense, the extension of American organizing principles to Germany challenged the institutional knowledge that was still at a critical stage in the historical development of Germany. American firms presented one kind of solution to the increasing problems created by the growing mechanization of work.

A particularly interesting case is Bosch (I draw on the history of Prinzing 1989). By 1913, Bosch was facing increased competition from American firms, especially in the American market in which it had opened a factory in Massachusetts. Bosch began to experiment with Tayloristic ideas, and these came to a head in a famous strike in 1913, just about the time strikes hit Renault in France and Watertown in the United States. Taylor, back in Philadelphia, complained that people tried to take just parts of his system and changed the firms too fast. Here we hear the familiar refrain of system thinking and of the slow acquisition of procedural knowledge.

Yet, the strike at Bosch revealed more than the difficulty of adoption. For in these complex events, a few facts stand out. First, higher wages at Bosch were not sufficient to stop a strike, despite Taylor’s belief that wage incentives would lead to social harmony. Further, the introduction of new practices led to an increased hiring of Hilfsarbeiter and a downgrading of responsibility of the Meister. The social categories of work were challenged by the new methods. Finally, the politics of the SPD and the Deutscher Metallarbeiter Verband (DMV) were critical elements in influencing the strike.

In short, the introduction of Taylorist kind of ideas, many of which were indigenous to Germany, was not done abstractly but faced an existing social order, complete with skill identities (the Meister, the Facharbeiter) and with concerned political players. Bosch believed strongly in the importance of apprenticeship and in fact even started an apprenticeship school in the same year as the strike. Yet, the conflict between worker and owner was generic to the situation in Germany, and the strike says as much about late Wilhelminian Germany as it does about the details of the Bosch plant. It is particularly intriguing that Bosch decided to join the local employers association during the strike, even though his social welfare policies were viewed as radical by many of the other owners in the Ruhr and Bergbau area.

Pre-World War I Germany did not succeed in creating strong institutions required to support a system of skilled work and high wages. The precarious nature of these institutions came to the fore in the Weimar republic as many employers began to experiment with American production methods as a response to the gains made by unions in the revolutionary period following World War I.

There are four critical elements during this period. The first was that the inflationary period led to a rapid compression in wages among skilled and unskilled workers. Perhaps as a result, the apprenticeship programs during the Weimar period were especially weak, either because employers did not invest in them, or young workers did not want to sacrifice years of education for little gain. If one reads the Enquete Ausschuss documents drawn up at the end of the 1920s, there is a persistent theme of the dwindling supply of apprentices.

Second, the pressure to rationalize through mechanization proved to be a very difficult problem in the context of a highly skilled workforce. It should be remembered that engineers at Ford introduced the first assembly line by running an experiment on a Sunday and then installing it the next day. The story of Germany, unlike, for example, that of Citroen in France, presents a very troubled and slow adoption of mass production. Indeed, it is notable that many firms stalled in the process by adopting an intermediate stage organized around groups. Many of these work organization experiments were accomplished by an increase in female workers and Hilfsarbeiter who were paid substantially less than skilled or Facharbeiter. It is true in many industries, the percentage of skilled workers in the workforce returned to the pre-war levels. But in many industries this was not the case, and in almost all industries the proportion of women in the workforce was substantially higher. (This theme of the use of women workers to introduce new work practices can be found also in Goldin [1990] who investigated this pattern for the United States.)

The third point was that the introduction of so-called American methods launched a debate that went far beyond issues of interest, but rather posed the challenge to work out the implications for Germany. The original discussion somewhat blindly assumed that Taylorism or Fordism should be adopted outright. The response by labor to these arguments was negative. But in the end both business and labor began to approach these issues in a more balanced, discursive way. If one reads the material from this time, the impression is that there were proposals, some were tried, but most were rejected. Eventually, however, there was a rough understanding of what would

9 The following summarizes the argument in Kogut (1997).
work for the German context. In this process, institutions such as the *Rationalisierungs-Kuratorium der Deutschen Wirtschaft* (RKW) or *REFA-Verband für Arbeitsstudien und Betriebsorganisation* (REFA)² played a major role in the definition of these practices. Moreover, they created a strong sense of identity among the ("white collar") Angestellten with modern methods. The phrase of the REFA-Mann described the thousands of graduates educated in modern management methods, and suggests the formation of a managerial elite that saw itself as the diffusers of the new knowledge. They were the carriers of the new procedural knowledge that disbanded the Meister system in favor of a more rational approach to shop floor organization. Moreover, this change in the shop organization also led to changes in accounting and firm hierarchy. As a result, the 1920s showed an increase in management as a percentage of the workforce.

The interesting issue, finally, is what happened to the worker and the new methods. In Germany, unlike the United States or France, the use of bonuses tied directly to piece rates appears to have been far less accepted. What Georg Schlesinger called the Faktor Mensch was an indication that there was resistance to incentives that were seen as crude and contrary to Facharbeit. In Germany, we see the struggle for a definition of the worker in a time of growing mechanization. Generally, the industrial solution did not lead to a deskilling or to the imposition of crude incentives seen elsewhere. The redefinition of scientific methods in Germany were, in conclusion, deeply influenced by the prevailing norms of justice and adherence to a belief in sustaining the role of the skilled laborer in the work place.

Weimar Germany was a decade in which productivity remained low and political institutions weak. By the end of the 1920s, real wages were increasing, as was productivity. But the coordination between business and labor was very weak and precarious. Corporatist institutional solutions were only partly worked out during the Nazi time when women workers left the work force and apprenticeship programs were reinstated. In fact, REFA was educating thousands during the 1930s.

REFA not only operates today, but also operated for a few years in East Germany after World War II where notions for time study and bonuses found a willing audience. Indeed, one could argue that East Germany was built upon a procedural knowledge of individual effort measurement that the West came to abandon during the later decades. As a note of little worth, the costs of reunification would have been considerably lower in 1950 not because the relative capital stock or technology of East and West Germany were closer together, but because the procedural knowledge in 1950 was vastly more similar in what became two countries afterwards.

Complements are not platonistic concepts. They represent the social contract of work definitions, and carry a cognitive salience that guides the routine coordination of jobs and tasks among variegated skills in a work com-

The Weimar Republic achieved a reconstructing of skill, categorization, and wage based on fundamental, though incomplete, innovations in economic democracy. When embedded in corporatist macro-institutions, these micro-institutions have permitted the flexibility in adjusting the Coasian bargain along with technical and organizational changes in the Federal Republic.

Conclusions

In a classic article, Kocka (1979) concluded that the Federal Republic of post-war Germany represented a new beginning rather than a restoration of the Weimar Republic. In the reconfiguration of the balance of power between business and labor, the Federal Republic has built the macro-institutions of a coordinated economy that offer an escape from the kind of divided interests that plagued the Weimar Republic. And yet, the micro-institutions of work – works councils, collective wage agreements, apprenticeship and products calling for intensive skilled labor – are the complementary practices and strategies worked out during the 1920s.

It is tempting to say that the dilemmas facing Germany today are reminiscent of Weimar Germany. There are many elements that are strikingly similar. Unemployment is high. The pressure of women entering the workforce has had an important influence on changing the dynamics of the labor market. There is pressure on relative wages between skilled and unskilled. Some of the gains made by labor, not during a Spartacus revolt but during a long period of the policy of Soziale Marktwirtschaft are being rolled back. And of course, German procedural knowledge is being challenged by the diffusion of organizing ideas coming from elsewhere.

This analogy, I would argue, is right in the details, but wrong in the analysis. Not only are the political institutions vastly stronger, as are the social institutions of labor and business organization. There is also a deep agreement on the social values that should determine the main points of the discussion. In fact, it is the observation that social uncertainty has generated a discourse between interested parties that points to the feasibility of a solution.

Countries are arenas in which national values and identities are formed and developed. National norms do not provide superficial points of coordination, but rather contexts in which individual identities are anchored. Historical periods of institutional change always entail an ideological echo, for changing working definitions and ways of doing things implies a change in deeply-rooted identities.

Institutional change is possible, however. Despite strong functional descriptions of static economic systems, economies rarely collapse because single institutional components change. This durability stems from the stock of procedural knowledge that evolves by innovation, or by re-categorization of existing work roles. To suggest otherwise is to ignore that work practices

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² The abbreviation REFA initially derives from "Reichsausschuß für Arbeitszeitermittlung" (1924).
successfully migrate across countries without all the institutional baggage that functional arguments would claim are vital complements.

Even if institutional change is an adaptive process in the procedural knowledge held by individuals, corporatist actors play nevertheless powerful roles in two regards. The first lies in their ability to hinder or permit the local experimentation around new practices. The second aspect is their salience to the re-striking of the burden sharing bargain entailed in shifting identities and altering conceptions of the division of labor and classification of work.

It is ironic that the German strength in corporatist solutions to burden sharing is the drawback to the required experimentation in transforming work practices. The ills of eastern Germany are partly the result that the negotiated political order of the corporatist West Germany was not suited in allowing a region to explore paths from its given conditions in 1989. For along with centralized unions, business associations, and federal law came also definitions of work councils, apprenticeship programs defined by existing skill classifications, and specific templates of work organization.

The functional error was to believe that the incentive properties in the macro-institutional structures were tightly coupled with a set of micro-institutions. However, it is far from obvious that the macro-institutions by which negotiations are supported are uniquely coupled with the work definitions at the micro-level. The problem facing eastern transformation was not that of incentives and Coasian bargains. It was, and remains, the issue of the rapid transformation of procedural knowledge, along with that of work classifications, that represent legitimized rules for coordinated action.

References


