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# WHY AMERICAN ENGINEERS AREN'T UNIONIZED: A COMPARATIVE PERSPECTIVE

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## **Why American engineers aren't unionized: A comparative perspective**

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The decline of organized labor in the United States has stimulated a new interest in comparative research. Explanations of the prolonged stagnation and contraction of the American labor movement that focus on the United States alone run the risk of assuming that the American case is “normal,” and that the decline of organized labor is a structural inevitability of advanced capitalism. By broadening their scope to include other industrialized countries with similar political economies and very different labor histories, students of the labor movement will be better able to identify what is truly distinctive in the American case, and whether it is its distinctiveness or its typicality that accounts for the apparent demise of the American labor movement.

One of the phenomena comparative labor studies reveal is that labor unions in Canada and Western Europe have been much more successful than their American counterparts in organizing employees outside of the traditional strongholds of industrial workers and public employees. While this alone may not explain the decline of the American labor movement,<sup>1</sup> it certainly has been a factor preventing American unions from growing in the post-war period. Thus, one key task for students of American organized labor is to account for its relative failure, when compared to its counterparts in other industrialized countries, to organize “new” constituencies.

Professional and technical workers are among the most important “new” constituencies in question. The changing political economy of post-World War II industrial capitalism has been characterized by the rapid growth of the high-technology sector and the expansion of professional and technical employment, both within this sector and in older, more established industries. In the United States, at least, such

workers have been seen as difficult or impossible to organize, although there has been considerable disagreement as to why this is the case.<sup>2</sup>

In this article, we assess whether the American case is typical through a comparative analysis of the unionization of professional engineers in the United States and Great Britain. These two cases present a particularly useful and sharp contrast: in the United States, there are virtually no unionized professional engineers, while, in Great Britain, engineers' unions are widespread and have grown significantly in recent decades. Thus, a comparison of the two should provide insight into whether the failure of engineering unionism in the United States is inherent in the character of advanced industrial capitalism or whether it is due to the peculiarities of the American political economy.

Two important issues emerge from a review of the major analyses of professional engineers' unions. First, it has been argued by many, particularly on the American side, that professionalism and unionism are incompatible.<sup>3</sup> Professional associations have been identified as status bodies, concerned to ensure the reproduction of labor supply, while trade unions have been identified with wider political or class-based interests, alongside narrower economic aims which professional associations supposedly transcend. This view has been widely criticized,<sup>4</sup> but elements of it remain in the literature on professional engineers. One of our objectives in this article is to evaluate the impact of professional ideologies and organizational forms on the development of unions among engineers. Our conclusion is that professionalism has been a factor in the history of engineering unionism. However, its role has been far more complex and contingent than the "incompatibility thesis" can admit.

A second, more subtle, theme in the literature on professional engineers and unionism is that professional unions are "different." While acknowledging the reality that professional and union forms can be reconciled, some observers suggest that professional unions resemble only superficially their blue-collar counterparts and that, in certain ways, they represent an attempt to deny that professional workers belong to the larger labor movement.<sup>5</sup> In this article, we also consider whether professional engineers' unions are "different" and shed some light on why. Our comparative analysis yields considerable evidence in support of the view that they are. However, we argue that there is also evidence that these differences are not inevitable and may erode under specific historical circumstances.

Overall, we propose what could be called a “structural contingency” theory of engineers’ unionism in the United States and Great Britain. That is, we reject both the “simple” view that the differences between the two cases can be explained by simply saying that all societies are different and the alternate “simple” view which suggests that contingent or historical factors are irrelevant to the evolution of the labor movement. Instead, we contend that there are structural forces within all industrial capitalist societies which create pressures towards unionization among organizational professionals such as engineers. However, the outcome of these pressures, whether or not they are translated into viable engineers’ unions, is to a considerable extent dependent upon the specific conditions in different national contexts.

### **Professionalism and engineers’ unionism**

As noted earlier, traditional explanations of low rates of unionization among professionals have tended to focus on the nature of professionalism itself. Professional ideology and professional forms of organization are seen as antithetical to unionism; those occupations which define themselves as “professional” eschew unionism as incompatible with their ethical principles, social status, and employment conditions.

This kind of argument has been most persuasive for the “classical” professions, such as medicine and the law. Although the situation has changed somewhat in recent years, rates of self-employment have traditionally been quite high in such occupations. Inasmuch as unionism concentrates on negotiating the terms and conditions of employment, rather than defending self-employment and autonomy, it should not surprise us that doctors and lawyers have tended to see unions as inappropriate. Moreover, as Terence Johnson has noted, the fact that practitioners of medicine and the law have not, by and large, been employees of large profit-making organizations or public bureaucracies makes professionalism a viable form of occupational organization for them.<sup>6</sup> That is, doctors and lawyers have been able to dictate to consumers who may provide health care or legal services, to insist on and protect their freedom from external control – in Andrew Abbott’s terms, they have been able to define and to defend a “jurisdiction.”<sup>7</sup> Faced with a mass of disorganized, relatively weak consumers (not a powerful, organizational employer), doctors and lawyers have found professional organization to be a real alternative to unionism.

Once one moves beyond the “classical” professions, however, the situation changes. As Johnson points out, organizational employment is the norm for many of the occupations that are called, or call themselves, professions. For practitioners of these occupations, the professional defense of autonomy, self-employment, and professional independence has little meaning. On the contrary, as employees of large organizations, albeit relatively privileged ones, they experience many of the same pressures which historically have encouraged unionization in subordinate occupations – i.e., the need to bargain with powerful employers over the terms and conditions of labor. While the proponents of the thesis that professionals are being proletarianized may overstate the case,<sup>8</sup> it remains clear that unionism is less problematic for these “new” professions, to use Larson’s term. And there exists an extensive literature on unions in occupations such as teaching,<sup>9</sup> which demonstrates both the possibility and the fact that “professional” occupations can pursue their goals through unions.

### **A “new” profession**

There is no doubt that engineering is an example of what Larson calls the “new” professions. In both the United States and Great Britain, engineers experienced organizational employment at early stages in the development of the profession; as a result, one finds relatively little emphasis on self-employment and professional independence within engineering.

This is reflected in the form and ideology of both British and American engineering associations. In neither case does one find engineers endorsing the “medical model” of professionalism, with its emphasis on self-employment and professional independence. On the contrary, American engineers have traditionally rejected the idea of mandatory licensing for engineers as a method of creating professional control over engineering work. Indeed, representatives of the major professional associations have openly attacked this idea and have actively opposed legislation which would have required engineering licensing.<sup>10</sup> Similarly, although the “school culture” triumphed quite early in American engineering, so that the normal route into the profession is through formal engineering education,<sup>11</sup> there has been real reluctance to make this into a hard and fast principle. It remains the case even now that a minority of engineers lack formal engineering credentials.<sup>12</sup>

This is even more true for the British case, where one of the more notable features of engineering has been its strong links to a craft tradition.<sup>13</sup> Until fairly recently, formal credentials played a relatively weak role in the British engineering profession. Indeed, a very common route into engineering was from the shop floor; skilled workers could aspire to technical occupations, which were not “closed” to those who lacked university training. Moreover, even in recent years when the emphasis on university training as a prerequisite for engineering has increased, traditional recruitment patterns have not entirely disappeared. Although there has been an important trend toward strong professional credentialism in upper technical occupations, which has weakened the craft tradition there, it remains the case that engineering is not defined by engineers or their associations as a closed caste.

The engineering associations in Britain and the United States, thus, have not been mechanisms for occupational control. In both Britain and the United States, engineering professional associations have been relatively weak, and their impact on engineering has been markedly less than was the impact of the AMA on medicine. In both countries, engineering associations are fragmented, with different engineering specialties having their own professional societies. The bewildering alphabet soup of professional associations that this produces, and the lack of an overall, unified engineering organization, has been held partly responsible in both countries for the profession’s relative lack of influence over social policy and over employees.<sup>14</sup>

The leadership of the professional societies in both countries is dominated by engineers with strong ties to the major private sector employers of engineers. These strong ties with business help to explain the typical conservatism on economic questions of professional engineering bodies. Reflecting this relative conservatism, both British and American engineering societies define themselves primarily as “learned societies.” They see their role as involving the promulgation of professional knowledge and, when necessary, representing engineering opinion in public and private debates over technical issues. Neither British nor American engineering societies have exhibited much willingness to become active political advocates on major social issues or to represent engineers in disputes over material issues with government or private sector employers of engineers. Rates of participation by rank-and-file engineers in engineering societies are generally low in both countries, although it is probably true that rates of membership in the societies are somewhat higher in the United States. In the United States, surveys

of engineers have found that there is relatively little emphasis on publication and participation in professional associations as measures of professional status or success. Perrucci estimated that as many as one third of American engineers belong to no professional associations at all (including local or regional ones).<sup>15</sup> For the British case, Whalley's case studies found that "many of the younger engineers in particular regarded the institutions as antiquated organizations, with little to offer the practicing engineer. They seemed irrelevant." Membership was generally viewed by the older engineers as "an instrumental device to get a job."<sup>16</sup> Active participation in the institutes was non-existent. All in all, professional engineering organizations in both the United States and Great Britain are relatively weak and do not correspond to the "medical model" of the professional project.

One cannot help but be struck by the similarity of British and American professional organization. In both cases, the "classical" professional project, which we have argued poses the greatest obstacle to unionism, was a non-starter. Both are examples of "new" professions in which the pressures encouraging unionism are significantly stronger. Yet, British engineers unionized while American engineers did not.

### **Professionalism, status, and unionism**

Does this mean that professionalism had nothing to do with the evolution of engineering unionism in the United States and Great Britain? We think not. However, to understand its historical role, we need to take a more nuanced look at professional rhetoric and ideology. Although this may not provide us with a complete explanation for the failure of engineering unions in the United States and their success in Great Britain, it helps us to focus more clearly on the questions which need to be answered.

First, let us recall that engineering is a "new" profession. According to Larson, the professional project in such occupations focuses not on a combination of independence and status, but more or less exclusively on the latter.<sup>17</sup> And there has indeed been a deep concern with status issues in both British and American engineering.

Perhaps the most important manifestation of engineers' concern with status has been their preoccupation with their relationship with non-professional technical workers. The question of professional bound-



aries has, in fact, been central to the history of engineering unionism in both the United States and Great Britain. However, while engineers in both countries have shown similar concern for professional boundaries, this has been expressed in dramatically different ways. In the British case it was expressed *within* a union context, while in the United States it helped to undermine the emergence of unionism.

Historians have argued that engineers' relationship to non-professional technicians was the Achilles heel of engineering unionism in the United States. When professional engineers began to experiment with union organization, they were confronted with the question of whether or not to include technical workers in their unions. Fearing the loss of professional status for engineers that the inclusion of technicians implied, many engineers argued for their exclusion. This produced significant levels of conflict within engineers' unions, and contributed, ultimately, to their collapse.<sup>18</sup>

This account of the demise of American engineering unionism is true enough at one level. An analysis of the rise and fall of engineers' unions in the period between 1935 and 1950 shows clearly the importance of "the boundary question." Thus, right at the start, the initial impetus to the formation of engineers' unions was, to some extent, the fear of inclusion in industrial unions of non-professional workers. The passage of the National Labor Relations Act encouraged industrial unions such as the United Auto Workers to mount major organizing drives in many American industries.<sup>19</sup> These organizing drives often sought to include a wide variety of employees, including engineers, as part of the new bargaining unit. Since engineers would constitute a distinct minority within any industrial union, and since there was concern that involvement with blue-collar unions would produce a decline in the engineers' status, engineers began, with the encouragement of their professional societies, to form separate engineers' unions as a way of preventing their subsumption into the industrial labor movement.

This concern proved rather unnecessary. The National Labor Relations Board generally refused to include engineers in production workers' bargaining units and, in any case, the Taft-Hartley Act (1947) included provisions, promoted by the engineering societies, which prevented the forced inclusion of professionals in non-professional unions.<sup>20</sup> Nevertheless, engineers' unions survived for at least another decade, indicating that American engineers could accept certain kinds of unionism and had found that this type of organization met some of their needs.

Most observers concluded that engineers wanted a form of collective organization that would defend them materially but which was not linked to the larger labor movement.<sup>21</sup>

Still, the “boundary question” continued to dog the union movement and was crucial to its eventual decline. Many of the engineering and technical unions that survived in the 1950s became embroiled in bitter disputes over the inclusion of technicians. Some argued for their inclusion, on the grounds that greater numbers led to greater strength and that it made sense to include all technical workers in a single bargaining unit. Others did not wish to be associated with technicians, fearing that they would be treated as technicians by employers and the general public. Many unions eventually split over this kind of issue.

Most notably, the Engineers and Scientists of America (ESA), founded in 1952 in an attempt to provide a national federation for professional engineers and scientists, fell apart over such status questions. In 1956 a series of bitter disputes erupted, initially over affiliation to the newly merged AFL-CIO. Although most ESA affiliates rejected this, a few wished to join. Several eventually left the ESA, splitting the federation and, in at least one case, causing the decertification of the local union. Disagreement also arose over the question of including non-professional technicians in engineering bargaining units as well as over tactics (some affiliates wished to emphasize lobbying rather than collective bargaining). The ESA eventually split in 1957, and most of its member unions fell into decline.<sup>22</sup> This and similar splits weakened the unions dramatically and, in many cases, augured their demise.

In short, there is no doubt that the “boundary question” was at the heart of the decline of American engineers’ unions. Comparison with the British case indicates that British engineers have developed similar concerns about the boundary between themselves and non-professional workers. Clegg has noted that, in the confused pattern of trade union structure in Britain, white-collar workers’ preference to join white-collar organizations is one of the only safe facts.<sup>23</sup> Yet even this structural given began to erode in the 1980s – up until this time it was true that the first experience of unionism for technical workers, and white-collar labor in general, was through their own exclusive organizations. Notably, it has proved possible to accommodate these status concerns within the union movement, allowing the technical unions to survive and grow. These different outcomes suggest that a concern with status and exclusivity is not incompatible with unionism. Depending on

the larger context in which such concerns are expressed, as well as the timing of the emergence of the issue, engineers' sense of professional status can be accommodated by the union movement.

Craft exclusiveness was the dominant form of unionism for technical workers in Britain well into the 1960s. There were no general white-collar unions until the 1960s, and expansion away from a particular core occupation (for example the "draughtsmen's union" deciding to recruit planning engineers and "other technicians") was undertaken somewhat reluctantly, but with determination.<sup>24</sup> General manual unions did establish white-collar sections, particularly for clerical staff, but these have not proven to be durable forms and have declined and disappeared in recent years. Craft unions, too, such as the Amalgamated Engineering Union (AEU) or the Electrician's Trade Union (ETU) did strive to include foremen, technicians and even professional engineers within their ranks, but met with limited success in competition with exclusive white-collar unions.<sup>25</sup>

The shape of British technical unionism began to change in the late 1960s, in the context of a major change in the pattern of engineering training. In the 1960s, British engineers started to be produced through the universities, not through part-time courses in technical colleges and "premium" apprenticeships, and a "graduate barrier" began to emerge within the broad technical engineering labor process. This was a new phenomenon in Britain. Engineers were being "professionalized" and not socialized through the craft traditions, where acquiring a union card and experience had been part of the general apprenticeship. "Professionalization" opened new opportunities and challenges for collective organization, and there have been several drives to generate organizational forms adapted to new patterns of occupational closure. These have not, however, taken place within a political or historical vacuum, and competition for newly professionalized engineers has been divided between an evolving but entrenched union movement and new exclusive professional bodies.

Established unions, like DATA (the Draughtsmen's and Allied Technicians' Association), launched membership drives in the late 1960s aimed at the professional engineer. Initially, engineers were incorporated as a standard category of membership with no sectional autonomy. This was only partially successful, and the union policy towards accommodating engineers has been through several changes, until by the late 1970s granting limited autonomy within the union was decided

to be the best method of recruiting these groups. The union followed the pattern of sectionalism developed by another technical union, ASTMS (initially formed by a merger of foremen and scientists' craft unions), and consciously adapted the union structure and character to the status consciousness and exclusivity of engineers.<sup>26</sup> DATA, later TASS, modified its strategy through competition from other unions who emerged to recruit the newly "professionalized" engineers.

From the late 1960s, "professionalization," however partial, offered other organizations an opportunity to move into the area via exclusive engineers' unions based on educational segmentation. It was the professional engineering institutes and the Engineers' Guild which made the running for these new "qualified engineers." In 1969 the Engineers' Guild, with a scattered membership of 6,000, established the United Kingdom Association of Professional Engineers (UKAPE) as an exclusive "professional engineers' union." Other "professional" unions appeared at the same time in an attempt to recruit engineering, science, and technology graduates in industry in opposition to established white-collar unions.<sup>27</sup> This first professional union strategy failed partly because of employers' opposition to the further proliferation of unions within an already overcrowded multi-union environment.<sup>28</sup> But, equally important was the determined opposition to the unwelcome newcomers of established technical unions such as TASS and ASTMS. Significantly, the old unions could claim efficacy in collective bargaining, while calling on the political power of the TUC and wider union movement to block any encroachment into their job territories by professional and anti-TUC, right-wing rivals.<sup>29</sup>

A second wave of professional engineering unionism occurred in the late 1970s, when a single-industry engineers' union, the EPEA, formed the Engineers and Managers Association (EMA) to recruit outside the power engineering industry. According to the official historian of the EPEA, the new union was a spontaneous response to demands by engineers for an EPEA-style union.<sup>30</sup> In reality, it was a response to declining membership of the EPEA in a contracting industry that forced the union to recruit further afield. They also capitalized on the failure of UKAPE to make any in-roads into recruiting engineers from scratch. The EMA was sponsored by the collective voice of the engineering institutes, the Council of Engineering Institutes, to challenge the growth of TASS and ASTMS.<sup>31</sup> Unlike UKAPE, the EPEA had well-established trade-union roots, dating back to 1913, and represented a more serious challenge to established technical unions.

The challenge was seen by some commentators, such as Roslender, as inaugurating a “new model unionism,” combining an established trade union effectiveness with a strong orientation towards professionalism which would act like a magnet for graduate engineers, and a strategic model for other organizational professions such as accountants, personnel managers, systems analysts and marketing staff.<sup>32</sup> However, such a scenario has failed to materialize. The EMA was blocked from establishing a wider recruitment base due to established union opposition, a general decline in union growth from the late 1970s, and the non-viability of small unions within an increasingly concentrated British union environment. Employers were reluctant to grant recognition to another union when a strategy of reducing the number of bargaining units has been their aim for a number of years. The EMA continued to experience organic decline and picked up only four “transfers of engagement” of engineers’ and managers’ staff associations between 1977 and 1987. Less than 20 percent of its 41,000 paper membership were outside its original base in electricity supply.<sup>33</sup> It remains a small, exclusive right-wing union within the TUC, which will only survive through merger, most likely to the equally right-wing EEPTU.

The established home of engineers and managers staff associations outside technical unions is the right-wing EEPTU, which has the largest number of engineers of any manual union.<sup>34</sup> It houses its staff associations in a separate section called the Electrical and Engineering Staff Associations (EESA). The EEPTU-EESA absorbed five engineers, managers and foremen’s staff associations between 1976 and 1987, and four “professional unions” which appeared in the late 1960s, including ASEE, the Steel Industry Staff Association (SIMA), UKAPE and AMPS. All of these organizations were launched on the basis of “professional exclusiveness,” hostile to white-collar-unions, let alone manual ones. That these supposedly professional unions should have ended up within a manual union underlines the fact that their concern with occupational exclusiveness existed alongside a right-wing political practice, and that the latter is probably a more significant determinant of union form and character in Britain.

TASS became a technical white-collar union with a sizable craft manual union base by absorbing craft unions in the 1980s. It changed again in 1988, when it merged with ASTMS, to form Manufacturing, Science and Finance (MSF), the biggest white-collar union in Europe, with a paper membership of 600,000 and a reach across the staff/manual and industrial divides between manufacturing and service.

ASTMS grew through merger and the absorption of sixteen staff associations (which had flourished as alternatives to independent unions in the 1960s, but declined in the 1970s and 1980s). Although the two unions combine different traditions, they represent the single largest concentration of technical labor in Britain today. This is a “new wave unionism,” conglomerate and big, within an increasingly concentrated union environment.<sup>35</sup>

Engineers in Britain today, insofar as they have a choice of unions to join, are faced with the two political poles of the MSF and EEPTU, and the occupational exclusivity and right-wing character of the EMA. The project of occupational exclusivity as a basis for collective organization looks increasingly untenable, and it will be union size and politics, not occupation or status, that determine the pattern of union structure in the future.

Thus, engineers in both Britain and the United States have demonstrated strong concerns with status. However, in the British case, established technical unions were adept at accommodating these concerns by granting separate bargaining facilities, defending wage differentials, and the like, while at the same time blocking professional-only unions from either entering or expanding into their domain. British technical unions have found a variety of means of meeting the changing aspirations of engineers while keeping them in membership of the wider union movement. Indeed, engineering unionism grew most rapidly in the aftermath of the recent shift towards credentialism and university training for engineers. In short, while the kinds of professional status concerns characteristic of a “new” profession *have* shaped the union movement in both cases, the British case indicates that the presence of such concerns alone is not inconsistent with unionism. If we are to explain the failure of American engineering unionism, therefore, the influence of professionalism must be examined in conjunction with the role played by other factors.

### **Business professionalism**

Before turning to a consideration of these other factors, a second aspect of engineers’ professional rhetoric and ideology should be noted. If engineering is a “new” profession, with a distinctive concern for status, and not autonomy, it is also a “business” profession. As has been noted by virtually all observers of the engineering profession, the

category of engineers is enormously heterogeneous, containing practitioners in significantly different social, indeed *class* positions. Thus, “engineer” can mean a relatively low-level technical worker performing largely routine work in testing. Or, it can mean the chief executive officer of a multi-national corporation whose career began in engineering. It is the presence of engineer-managers within the professional community that is of particular importance to the history of engineering professionalism and engineers’ unionism, because they have been very influential within the national engineering associations of both the United States and Great Britain (which has helped fuel the argument that these associations are, in some ways, extensions of business rather than independent professional associations). To a great extent, it has been their brand of professionalism that has been the official ideology of the organized engineering profession. And, not surprisingly, their professionalism has often been particularly hostile to unions.

We have already noted the reluctance of engineering associations in both the United States and Great Britain to advocate and implement traditional mechanisms of professional closure such as licensing and formal educational requirements for entering engineering practice. Whalley suggests that, in the British case, “engineers ... lack the power and will to support a credential-based exclusionary strategy.”<sup>36</sup> But this is not due, as Whalley and others maintain, to the “inherently practical” nature of engineering, where “only so much can be learned in the classroom.”<sup>37</sup> Law and medicine are equally practical, combining theoretical and craft elements. What sets engineering apart is the enormous influence of engineer-employers over the profession and its institutions. Strict rules limiting membership of the profession to those with formal educational credentials would have the effect of excluding some of these employers, a fact which has been a very important impediment to the development of such rules in the American case. Moreover, engineering employers have often used their dominant position within engineering associations to discourage the formation of inflexible restrictions, in the form of credentials, that would limit their flexibility in the use of technical labor.<sup>38</sup> It should not surprise us that engineering employers have not favored the development of a strong, independent profession analogous to the medical profession, capable of restricting the supply of technical labor and of achieving significant control over its own labor.

In short, the influence of engineering employers has been one factor underlying the engineering profession’s lack of emphasis on closure

and professional autonomy. Moreover, the professional ideology that has emerged within engineering, colored in various ways by these elites, has had a distinctively anti-union cast. It is possible to argue, in other words, that engineering-employers have attempted to present professionalism as an *alternative* to unionism, as inconsistent with union organization, as a means of trying to impede, or at least control, the emergence of engineers' unions.

It has been the employer-influenced professional associations that have been active proponents of the view that professionalism and conventional unionism are incompatible. In the British case, this is evident in the efforts by the engineering institutes to encourage the development of "separate" quasi-unions such as UKAPE which would not be linked to (and presumably strengthened by) other union organizations. In the United States, the national engineering associations have consistently opposed unionism. In the 1920s, they helped to undermine the emergence of a quasi-engineers' union in the form of the American Association of Engineers (AAE), arguing that it was not professional.<sup>39</sup> And, in the 1940s, they initially opposed the formation of engineers' unions outright. Once it became apparent that it would not be possible to avoid the inclusion of engineers in conventional unions, the engineering associations, most notably the ASCE, moved to advocating the development of separate bargaining units for professionals.<sup>40</sup> Goldner and Ritti have argued that employers often encourage or even impose professional ideology among their engineering employees, because it serves as a form of social control.<sup>41</sup> The history of the relationship between employer-influenced professionalism and engineers' unions seems consistent with this view. And the existence of a conscious effort to counterpose professionalism and unionism by engineering-employers *has* served to make their reconciliation more difficult and more complex.

Yet, British unions successfully overcame this obstacle, while American unions did not. If we look back over this review of the influence of professional concerns, ideas, and forms on engineers, we are thus left with the conclusion that American engineers were more likely to "frame" their concern with occupational status within the employer-influenced rhetoric of business professionalism. In contrast, British engineers, while similarly preoccupied with status and exposed to business-professional rhetoric, rejected the latter and framed their concerns within the rhetoric and organizational forms of unionism. In both cases, professional rhetoric and ideology had an effect, but the outcomes were



startlingly different. The question thus becomes why American and British engineers responded so differently to a rather similar set of “professional” concerns.

### **The status of the engineer**

One of the major reasons for this different response is that engineers in Great Britain and engineers in the United States have been accorded different status by society as a whole and management in particular. It has been well-documented in a variety of contexts (ranging from social scientific research to government inquiries such as the Finniston Report) that the status of the engineer in Great Britain is lower than his/her counterpart in other societies, including the United States.<sup>42</sup> Where British engineers routinely complain of being treated like workers, American engineers, except in periods of salary compression and unemployment, seem relatively secure in their “middle class” status and are seen by both the public and managers as relatively high-status professionals.<sup>43</sup>

These differences in status reflect larger social attitudes towards technology and industry in Britain and the United States.<sup>44</sup> American culture has long exhibited extremely positive attitudes towards technology and those individuals and groups who work with it. This positive evaluation of technical men and women is apparent in the widespread idealization of mythical figures such as Benjamin Franklin or Thomas Edison, whose virtues consist in their having been “practical men” who invented valuable new technologies or discovered important scientific principles. Similarly, American culture is also characterized by a deep respect for the activities of the business man and woman.<sup>45</sup> Although there are complexities here (e.g., the strong antipathy to “bigness” in business), figures such as the early captains of industry (Carnegie, Rockefeller, et al.) or more recent examples of corporate “excellence” (Iacocca, Watson, etc.) are routinely lionized in the popular media.

American engineers have benefitted from these positive evaluations of business and technology. Most obviously, since Americans tend to value technology, and since engineers are clearly linked to technology, there is a generally positive view of engineers in American society as valuable, useful employees. They also have gained a degree of status from their association with business. Early on, engineering was linked to entrepreneurial modes of business. Sons of prominent families

(including Frederick Taylor, the father of scientific management) saw engineering as a dignified occupation because, although it might mean getting one's hands dirty, it involved the prospects of a career culminating in the proprietorship of a small machine shop.<sup>46</sup> While the days of the entrepreneurial engineer did not survive long in the context of corporate capitalism, the fact that respected middle-class families sent their sons into engineering lent the occupation a degree of status which carried over into the organizational age. More recently, engineers have been associated with many of the positive technical accomplishments of American business. Corporate slogans emphasizing "better living through better technology" or "chemistry" routinely present Americans with an image of the engineer as the fusion of the positive sides of both technology and business. While there have also been criticisms of engineering activities, criticisms which have grown louder since the 1960s as a result of the growing doubt about the virtues of scientific "progress," engineers have occupied a relatively privileged place in the American view of things.

One of the more important consequences of this positive cultural stereotype of the engineer has been that American managers have tended to see engineers as an important type of employee. Since technology is seen as important to business success, and since engineers have long been regarded as "middle class" professionals, major employers have taken engineers seriously as prospective managers. Moreover, as David Noble has shown, American managers, because they regarded engineers as important to business success and because they were aware of the need to recruit engineers into managerial roles, took an active part in shaping the curriculum of American engineering schools.<sup>47</sup> By encouraging business courses and certain kinds of practical training in engineering programs, managers ensured that the schools would produce trustworthy engineering personnel who were socialized to the needs of the corporation and who would constitute a pool of potential managers.

For all of these reasons, engineers in the United States have had a relatively high status and relatively close ties to the managers who employ and supervise them. There can be no doubt that this has accentuated their tendency to question the relevance of unionism to their situation. By contrast, British engineers, handicapped by the stigma associated with working with one's hands, have occupied lower status. This difference is one of the factors helping to explain their greater willingness to adopt union forms of organization.

As already mentioned, British engineers have historically entered the engineering profession through premium apprenticeships and pupilage to particular employers who have exercised a massive influence on the structuring of the engineering profession. Not only did such systems emphasize the importance of engineering as a “practical craft” and not a theoretical discipline, but the supply of engineers qualified through such routes was never sufficient to undermine the reliance on manual crafts. When technical education appeared in the nineteenth century to supplement craft practices, it was “defined so narrowly that the classes it sponsored for workers in fields such as engineering offered little competition to long established methods of craft-oriented training.” While in the late nineteenth century American capital restructured engineering through the universities, in Britain, engineering courses were restricted to a few institutions, and did not in any way disrupt the apprenticeship system. Ahlstrom has noted the relative scarcity of engineering courses in British universities in the late nineteenth and early twentieth century, and the concentration of graduates within a limited number of industries – chiefly mining and brewing.<sup>48</sup> A survey of graduates from the main graduating institutions revealed, moreover, that only 20 percent of those with a technical degree actually entered British industry, and none of these in managerial positions. In other words, this limited supply was not met with open arms by industry. Part-time study and apprenticeships remained the dominant method of training engineers until the 1960s. This served to ensure that entry channels were not monopolized by the middle class, but open to workers. Indeed, engineering did not figure as an appropriate profession for the middle class, who preferred pure science and the arts to the applied disciplines.<sup>49</sup> Recent studies of engineers in Britain confirm the continued importance of the craft tradition for socializing engineers into a practical orientation where theory, credentialism, and a strict separation between intellectual and manual labor are rejected in favor of fluidity between learning and doing.<sup>50</sup> This is not inherent in engineering, but rather its peculiarly British structure.

If we look at the growth of managerial hierarchies in Britain and the place of engineers in them, what is striking is that engineers fail to make top management positions. Armstrong has argued that managerial hierarchies in Britain are the domain of accountants and marketing specialists, two groups linked with unproductive labor.<sup>51</sup> This reflects the typically British disdain for trade, craft, or the practical among business elites. Unlike the German case, in Britain it has been “anti-productivist ideologies” that have found most support. This thesis

echoes the wide literature on “the peculiarities” of British capitalism.<sup>52</sup>

Such cultural accounts of the differences between countries need to be engaged in cautiously, so as to avoid an oversimplified, blanket “societalism.” For example, there is the danger of ignoring the sectors of British industry where engineers do dominate managerial hierarchies, such as chemicals, mining, public utilities, and construction. There is therefore a “sector” effect in operation, and this may reflect the lack of opportunities for marketing in these sectors or the fact that civil engineers, unlike other engineering specialisms, have retained control over finance, whereas in general manufacturing, these functions have been removed from the engineers, who have become narrow technical specialists. Moreover, in these sectors, membership of engineering institutes is higher, and unionism of a strictly “exclusive” form. The larger technical unions are restricted in these sectors, except in the case of chemicals, where ASTMS has been traditionally strong.

Nevertheless, allowing for such sector qualifications, it is true that “management” in Britain lacks a technical heart, and is rather about general decision-making. Moreover, as Lazonick has noted in comparing the growth of British and American managerial hierarchies, in Britain managers were recruited from the elite public schools and universities as “surrogate family members,” and having a technical skill was not only unnecessary for selection, but probably a disadvantage.<sup>53</sup> Having the right background, not the right qualifications remained the most important factor in recruiting in senior management until the emergence of business education in the 1960s.

The question posed by these historical legacies is why British engineers have not acted to change their status, increase their attractiveness to management, and in general counter all this bad press. Prescriptions for improving the health of the engineers litter the history of the profession over the last hundred years. These have focused on educational reforms, institutional rationalization, enhancing the technology consciousness of the nation, state commissions into the supply, status, and training of technical manpower, trying to attract women into the profession, and trying to attract more school children into the profession. We cannot here examine these in detail; others have noted their shortcomings.<sup>54</sup> What we can say is that institutional rationalization has failed to improve the public perception of the engineer: recruitment into engineering is declining; few of those who leave as graduate engi-

neers want to stay as engineers; a recent survey of engineering graduates revealed that “two out of three” had decided against a career in engineering;<sup>55</sup> business education of engineers either reinforces desires to leave the profession or is seen as irrelevant to the practicing engineer. Management persists in regarding engineers as specialist labor, and pay rates continue to be comparatively poor against other management specialisms, such as marketing and accountancy.

### **Engineers’ status and the timing of unionization**

The different status of engineers in the two societies has had important consequences for the history of engineering unionism. In particular, it encouraged engineers to respond to the emergence of material concerns in different ways. American engineers, with their closer ties to management and relatively high prestige, tended to look first to professional associations to solve their material problems. Unionism was not something to which they were exposed during their period of professional training; and joining unions implied negating their ties to management and crossing a socially constructed class divide. In contrast, British engineers were socially defined as the “top” of manual labor. As a result, they had more direct experience of unionism and had fewer psychological obstacles to overcome.

The initial organizational “choices” of British and American engineers, rooted in their different social status, tended to perpetuate themselves. In the British case, unionism among engineers emerged relatively early and established itself well before the solidification of a strong, graduate-based professional identity. By contrast, American engineers embarked quite early on a kind of “professional project”; despite its lack of success, engineering unions had to struggle to emerge after this direction was well-established. Thus, we need also to consider the question of timing, an issue which has generally been neglected in sociological discussions of professionalism and unionism. It clearly matters whether unionism or professionalizing forces emerged first.

In the American case, like the British one, engineering associations have not defined themselves as defenders of engineers’ material interests. On the contrary, they have resolutely resisted being drawn into this role, as we have seen. However, in periods of economic hardship among engineers, members of the profession have tended to look first to the professional associations for help. This pattern has been evident

on several occasions in the history of American engineering in the twentieth century. Thus, in the period after World War I when engineering employment slipped and engineering salaries were losing ground to those of manual workers, many engineers turned to their professional societies for assistance with their material problems. The societies were reluctant to become involved in such activities, which led to a significant amount of internal conflict and helped fuel what Edwin Layton has called "the revolt of the engineers." However, fearing the development of engineers' unionism, most of the professional associations responded with some concessions to dissidents within the societies and with a variety of half-measures such as employment services and talks and publications on finding a job.<sup>56</sup>

A similar pattern emerged in the Great Depression. Like most Americans, engineers were hard hit by the Depression. A federal government study of the engineering profession estimated that 34 percent of American engineers had experienced unemployment between 1929 and 1934 and reported a 33 percent decline in median earnings during the same period.<sup>57</sup> This stimulated calls for action on behalf of engineers; and, while there was some interest in unionization, most engineers looked first to their professional associations for help. While the associations shied away from anything that resembled collective bargaining, they did recognize the need to do something and responded, as in the earlier period, with employment services, employment advice, and the like. Once again, engineers turned to their professional associations as their first resort in a period of crisis. And, once again, the associations responded with half measures which seemed designed to discourage the development of more assertive forms of engineering organization.

Finally, in the late 1960s, when cuts in the space program and the winding down of the Vietnam War led to a decline in engineering employment, engineers again turned to the professional associations for assistance. As in the previous crises, pressure was placed on the societies to do something about the plight of unemployed engineers; typically, the societies responded with employment advice and similar programs. And, as in earlier periods, the dissatisfaction with these relatively weak measures produced heated debate *within* the professional societies. The debate focused on such questions as whether engineering societies could serve their members' professional interests if they were closely tied to employers and whether it was appropriate for such societies to confine their activities to what was possible within the confines of self-defined "learned society."<sup>58</sup>

In summary, American professional engineers have consistently turned to their professional associations when a material crisis developed within the profession. This is in marked contrast to the British case, where, by and large, the societies have been seen as irrelevant to material issues. At the heart of this tactical difference lies the different status of British engineers. Unlike their American counterparts, British engineers were defined as part of manual labor and lacked close ties to management; the attractions of a self-evidently ineffective “professionalizing” strategy were, thus, diminished. Subsequent attempts to pursue a “professionalizing” strategy had to contend with the reality that unions for engineers already existed.

Exclusive, university-based entry systems into engineering have been relatively slow to develop in Britain, which has been distinguished by the persistence of diverse, apprenticeship-based access routes. This reflects traditional training patterns in Britain and employers’ hostility to purely academic training and their resistance to empowering engineers with exclusive credentials. Graduate entrants into engineering accounted for 35 per cent of total engineers in 1945, but we see a progressive increase in the proportion in the post-war period, rising to 50 percent in the mid-60s, and over 90 percent in the 1980s.<sup>59</sup> By contrast to American engineers, graduate status as a boundary badge of professional identity is a relatively recent phenomenon.

This difference meant barriers between professional associations and trade unions could not be built on an educational divide, and the apprenticeship system persistently exposed engineers to unionization. British engineering institutes have, as a consequence of this and the altogether more legitimate place of trade unions within the society, had to adopt a more flexible and strategic posture towards technical unions.

British engineering institutions, like their American counterparts, see material issues as inappropriate concerns for professional organizations; indeed, many are restricted by Charter from engaging in activities to better the material conditions of engineers. For example, the charter of the Institute of Mechanical Engineers states: “the Institution shall not carry on any trade or business or engage in any transaction with a view to the pecuniary gain or profit of the members thereof.”<sup>60</sup> They have therefore been vulnerable to competition from trade unions claiming to do just that, especially where employers are unwilling to accept as given established wage differentials, and therefore treat engineers as skilled labor, rather than a class apart. One response to the

restrictive economic function of the Institutions was the establishment of the Engineers' Guild in 1937 to promote the material interests of all engineers in corporate membership of the institutions. The Guild, in addition to promoting the public image and professional standing of engineers, advised individuals on terms of employment, pensions, salaries, and status questions. It is significant that the Guild appeared at a time when unionization of technical labor was increasing. The Guild, however, was no answer to workplace union organization provided by the technical unions and central to the post-war British industrial relations environment. It struggled along with a scattered membership of around 5,000–6,000 until dissolving its membership into the UKAPE, an organization set up by the institutes in the late 1960s when technical trade unionism was again booming. Indicative of the failure of this strategy, apart from the low membership of the Guild, has been the support for particular trade unions by the engineering institutions to block challenges by less welcome trade unions.

An early instance of this appeared when the Electricians' Trade Union began to bring within its membership engineers of all ranks in the power stations in 1917. The Institution of Electrical Engineers attempted to form its own "exclusive" association to block this drive. However, this failed as a moderate "exclusive" union was already in competition with the ETU: the Electrical Power Engineers' Association. The IEE sided with the EPEA, recommending power station engineers join this union to block the threat from the manual craft union.<sup>61</sup> Another example is the setting-up of UKAPE by the Engineers' Guild in 1969 to compete with established technical unions who were actively recruiting graduate engineers. This, as noted below, failed. In 1975, the Council of Engineering Associations, an organization formed to promote the public interest of all engineering institutes, openly but reluctantly supported, for the first time, engineers joining trade unions. This was a strategic decision aimed at promoting a new, right-wing union, the Engineers' and Managers' Association, formed out of the EPEA to recruit engineers outside of the power industry.<sup>62</sup> The CEI recommended members join the EMA and three non-affiliated "professional unions" – UKAPE, the Association of Professional Scientists and Technologists (APST), and the Association of Supervisory and Executive Engineers (ASEE). The large technical unions, where the majority of engineers are organized, TASS and ASTM, were not recommended as "they were considered insufficiently professionally orientated and did not incorporate in their rules provision for a ballot before taking industrial action."<sup>63</sup> The voice of the professional asso-



ciations, as expressed through the CEI or the Engineering Council established in 1982, has continued to promote the EMA and what became the home of the failed professional unions in the 1980s, the Electrical, Electronic, Telecommunications and Plumbing Union – Electrical and Engineering Staff Associations (EEPTU-EESA) against the larger technical unions.<sup>64</sup> The British case therefore exhibits an opportunistic attitude of engineering institutes towards trade unions, and a keen political strategy of promoting right-wing organizations against what are perceived as large, left-wing unions. For comparative purposes, however, what is striking is the complete failure of the institutions themselves to form the organizational arena within which engineers' material grievances are satisfied. This has always taken place within a trade union form.

Thus, the late emergence of engineering professionalism in Great Britain helped facilitate the growth of engineers' unions. By contrast, American engineers' unions had to contend with a well-established, deeply-entrenched professionalizing thrust. The different results of engineering professionalism in the two cases were, in other words, heavily influenced by the historical sequence of events.

### **Unanswered questions**

The combination of status differences and the timing of events was a major factor shaping the history of engineering unionism in Great Britain and the United States. However, we reject the conclusion that this alone constitutes an explanation of the difference between the two cases.

First, we must ask why British engineering unions did not atrophy as the status of engineers rose in the 1960s, 1970s and 1980s. Although British engineers retain part of their traditional stigma as manual labor, they have moved considerably closer to the status occupied by American engineers as a result of new, university-based training programs. Yet, their unions did anything but shrink; indeed, engineering unionism grew most rapidly precisely in this period. Status alone, then, does not account for the different history of British engineering.

Nor is it true that the early emergence of professionalizing tendencies inevitably blocks unionization. One can point to the experience of occupations where unionism did take hold in spite of existing profes-

sional movements (e.g., university teaching). Indeed, closer examination of the history of American engineering indicates that there have been strains of nominally “professional” ideology within the American engineering community, which has been more open to unions or union-like organization.

Thus, students of the rise and fall of engineers’ unions in the 1940s and 1950s found that rank-and-file engineers’ professionalism was, in many ways, rhetorical and not incompatible with the principle of unionism as such. Research on American engineers’ attitudes (as well as those of other organizational professionals) has shown that professional ideology is not an inherent barrier to unionism.<sup>65</sup> Professionalism may color the unions professionals create – giving them a distinctive preoccupation with issues such as salary differentials, merit pay and career structures.<sup>66</sup> Our view of the specificity of professional engineers’ unions is developed more fully in the concluding section of this article. But, the professionalism of the rank-and-file engineer is not the opposite of unionism.

The case of the American Association of Engineers (AAE) illustrates well the relationship between engineering professionalism and union organization and the diversity of opinion within the engineering community.<sup>67</sup> The AAE emerged at the end of World War I, in the context of heavy inflation, unemployment, and a decline in the earnings of engineers relative to those of other industrial employees. Although it explicitly rejected the idea of unionism, its membership wanted the AAE to act like a union *as well as* a professional association. They clearly joined for “union” reasons: i.e., they hoped for collective action on the material questions, such as salaries and employment, of concern to engineers. It was the failure of the AAE’s leadership to act more aggressively on the remuneration question that led to the AAE’s decline. Under pressure from the more resolutely anti-union professionalism of the national engineering associations, these engineering leaders backed off; the AAE’s membership began to decline rapidly almost immediately. Significantly, many of the material concerns expressed by the rank-and-file engineers who joined the AAE continued to crop up in the unionization efforts of later decades.

In summary, status differences and the timing of unionization efforts alone do not explain the different histories of engineering unionism in the United States and Great Britain. A fuller explanation must place these factors in the context of other factors external to the engineering profession itself.

## **The labor movement and the engineer**

One historical factor conditioning the development of engineers' unions is the attitude of the labor movement towards engineers. The willingness of unions to attempt to recruit engineers as members, and the manner in which they approach engineering employees, has been a major factor affecting overall rates of engineering unionization. And, as a comparison shows, there are major differences between the British and American labor movements in their approach to professional engineers.

The major labor organizations in the United States have not demonstrated a sustained interest in organizing professional employees in general and engineers in particular. Although there have been periodic attempts to establish relationships between the labor movement and professional engineers, these efforts have been sporadic at best and indicate clearly the labor movement's sense that professional engineers are not their central constituency. In the 1920s, there were a few isolated attempts to establish engineers' unions linked to the American Federation of Labor; but, these were very few and far between and, more importantly, tended to be associations of lower-level technical workers such as draftsmen. Also in the 1920s, the American Federation of Labor entered into a curious kind of relationship with the Taylor Society, forging a kind of alliance between industrial engineers influenced by scientific management and the labor movement.<sup>68</sup> However, this was not a permanent link and, in any case, did not involve any attempts to invite engineers to join the labor movement. On the whole, the AF of L has been rather skeptical of professional engineers and other "middle-level" corporate employees as union members, fearing that they would become advocates of management within the labor movement.<sup>69</sup>

The emergence of the Congress of Industrial Organizations (CIO) in the 1930s led to the most concerted effort to organize engineers. As part of the general upsurge in organizing activity in the late 1930s, some professional engineers were recruited into CIO affiliates. However, organizing engineers was never a high priority for union leaders in this period. Their focus was on organizing previously unorganized industries, such as automobiles, rubber and steel. If this meant that some engineers were organized as well, all the better. The CIO did create a separate white-collar union for the purposes of organizing white-collar employees of various kinds.<sup>70</sup> Nevertheless, it is clear that

few of the federation's resources were used specifically for the purpose of organizing such workers. It is thus hardly surprising that few engineers joined.

Since World War II, the leaders of the AFL-CIO have placed somewhat more emphasis on the white-collar sector. Particularly as the movement has stagnated and even contracted, there has been a growing recognition of the structural changes in the occupational and economic structure of the United States and the need to find ways to recruit new constituencies for organized labor. However, this has not translated into extensive organizing campaigns among white-collar and professional workers. The major exception is the public sector; in the 1960s major gains were made in organizing teachers, government employees, and other public-sector workers. Outside of the public sector, where organizing is considerably more difficult, there has been relatively little activity. Since professional engineers are primarily in the private sector, they have not been the object of much organizing activity.

In part this reflects the continued identity of the labor movement with manual labor. Although there has been increased awareness of the need to include non-manual workers in organized labor, it remains the case that the unions perceive themselves and are perceived by others as primarily organizations of industrial workers. As a result, they have tended to place more emphasis on recruiting unorganized blue-collar workers (viz. Operation Dixie, the last major AFL-CIO organizing campaign) rather than middle-level white-collar employees such as engineers. They also have not made much effort to recruit and employ organizers with professional backgrounds. This has made it more difficult for them to succeed among professional constituencies, especially outside the public sector where organizing is more difficult and where the presence of blue-collar unions tends to link the union movement as a whole with manual labor.<sup>71</sup>

Most importantly, however, the AFL-CIO has been far less active since the late 1940s in organizing generally. As many observers have pointed out, organized labor has devoted relatively fewer resources to organizing activities in the last three or four decades.<sup>72</sup> Not surprisingly, the union movement has not grown very much in this period and has been relatively unsuccessful in recruiting new constituencies. Among the groups who have been "neglected" in this period of stagnation and consolidation by organized labor are the engineers.

Not only have American unions been slow to attempt to organize engineers, but their occasional efforts to do so have not, on the whole, taken forms likely to encourage such employees to join with the larger labor movement. As we saw earlier, American engineers have shown a certain interest in unions, often because they hoped to use unions as a mechanism to maintain their status and position with respect to other kinds of employees. As a result, they have tended to be more comfortable with separate unions for engineers and to have been somewhat uncomfortable with the more egalitarian tendencies within the American labor movement. From this point of view, the natural home for engineers' unions was probably the AF of L, with its craft unions and its history of political moderation. However, the AF of L was deeply suspicious of professional employees such as engineers and made few efforts to recruit them.

The CIO, on the other hand, was more interested in white-collar and professional workers and made more concerted efforts to recruit them. However, for a variety of reasons, the CIO was not in the best position to appeal to professional engineers. Its leaders were aware of the preference of white-collar workers for separate unions, and they created a distinct white-collar union for this purpose: the United Office and Professional Workers.<sup>73</sup> The fledgling Federation of Architects, Engineers and Chemists and Technicians, founded in 1933, merged with this union in the late 1930s. Yet, despite these concessions to the exclusivism of engineers and other white-collar employees, the CIO was committed to the principle of *industrial* organizing, and many of its member unions attempted to include engineers in units dominated by blue-collar workers. For example, the International Association of Machinists conducted a major organizing campaign in the Seattle area in the mid-1940s that included professional engineers.<sup>74</sup> What is more, the CIO was committed to a much more egalitarian social policy and was identified, with some justice, as being the most radical of the major union organizations in the United States during the 1930s and 1940s. In other words, it was the kind of union organization most likely to frighten engineers away, given their concern with privilege, exclusivism, and political moderation.

The result was that engineers' unions were largely isolated from the major union federations when they began to appear in the 1940s and 1950s. Indeed, many of them were formed as an attempt to avoid inclusion in the CIO. The only engineers' unions that did join the CIO in the 1940s tended to be politically on the left; significantly, the omnibus

white-collar union of which these engineers' unions were part was expelled from the CIO in the late 1940s because of its links to the American Communist Party.<sup>75</sup> The isolation of the engineers' unions from the major labor federations left them relatively weak and made it much more difficult to expand engineers' unionism beyond a certain point.

Once the passage of Taft-Hartley had removed the need for defensive unions, and once the existing unions had begun to define themselves as something more than defenses against industrial unionism, the question of affiliation to the labor movement was raised once again. Some engineers' unions, still apprehensive about the earlier experience with the CIO, elected to remain independents. But others, desiring to make use of the greater resources and bargaining power of the national federations, eventually did affiliate with the AFL-CIO. However, this occurred in the mid-1950s, once the overall labor movement had stopped growing and once the organizing drives of the 1930s and 1940s were over. The unions were no longer organizing the unorganized in earnest, especially not groups who appeared to them to be at the fringes of the labor movement as a whole.

In summary, the American labor movement has not aggressively pursued professional engineers or has done so in such a way as to frighten away potential engineering members. The most concerted effort to organize engineers, that by the CIO in the 1930s and 1940s, was not a high priority and, in any case, was tarnished as far as many engineers were concerned by the CIO's radicalism and industrial unionism. The result was that engineers' unionism remained weak and relatively isolated; when some of these unions eventually did affiliate with the AFL-CIO, they did so after the movement had passed into a period of consolidation and stagnation and was no longer engaged in large-scale organizing activities.

By contrast, British unions have been much more flexible, and much more serious, in their pursuit of engineering members. As a result, they have been remarkably successful in organizing professional engineers. It is not that British workers have been less hostile to white-collar labor; they share with their American counterparts the same prejudices against the "pencil-pushers," the "office," the "staff," and those in what they perceive as parasitic, "unproductive" positions in the labor process. However, such prejudices have not translated into organizational hostility, and white-collar unions have been encouraged and welcomed by blue-collar organizations. White-collar workers have had to organize them-

selves into trade unions and earn a right to enter the labor movement by showing that they are prepared to mobilize the full repertoire of industrial sanctions against an employer and demonstrate external affiliations to the wider trade union movement, chiefly the TUC. Unions of clerks, foremen and technical staff all appeared in the late nineteenth and early twentieth centuries. Such unions flourished in a climate favorable to organization, and where the TUC was a legitimate player on the national political stage. The histories of white-collar unions, for example draftsmen or electricity supply engineers, indicates the importance of obtaining support from the manual unions, and affiliating to the wider labor movement.<sup>76</sup> Bain shows that all the major white-collar unions in the private sector affiliated to the TUC soon after their formation, without this affecting their recruitment.<sup>77</sup> The TUC was not hostile to white-collar unions, but it made no concessions to their affiliation.

Unionization among technical labor followed a well-trodden craft route. Such forms of unionism exhibit similar patterns of exclusivity, labor market control, and occupational maintenance as demonstrated by professional associations. Engineers have been recruited by such unions expanding membership upwards within job ladders more steeped in a craft ethos and less educationally fractured compared to the U.S. Union growth in the 1960s moved beyond craft towards a broader white-collar constituency, with technical unions such as TASS and ASTMS growing rapidly. Rival professional unions founded on exclusive lines failed, despite a more conservative image, because they were ineffectual and lacked wider political power within the bargaining arena.

What is critical to the emergence and durability of white-collar unions in Britain is the fact that the multi-union environment allowed and even encouraged the formation of separate unions. Exclusivity has remained an important requirement for white-collar workers. The gradual concentration of British unions in this century has allowed white-collar membership to grow both organically and through mergers, in a voluntary fashion. The TUC is now dominated by white-collar unions, and recent mergers have, as mentioned above, created conglomerate unions of mixed manual/non-manual memberships which nevertheless retain considerable inherited sectional autonomy.

## **The climate for union organization**

It should also be emphasized that the overall climate for unionization has had a significant effect on engineers' unionism. The United States is one of the most hostile environments for union organizing in the industrialized world; as a result, the American labor movement, especially since the 1940s, has experienced a long and much-publicized period of stagnation and even decline that has made it one of the weakest labor movements in the major industrialized countries. Michael Goldfield, in his recent work on the decline of organized labor in the United States, characterizes this as an historic "defeat" of labor, with the balance of class power shifting towards employers. Labor's weakness is linked to and exacerbated by its political isolation, regional isolation, and pervasive corruption.<sup>78</sup>

The reasons for this weakness are not difficult to identify. Although much emphasis has been placed on structural shifts in the economy and occupational structure of the United States, it is now widely accepted that this, in itself, is *not* a barrier to the continued growth of unionism (as cases such as Canada, Sweden, and Great Britain clearly indicate).<sup>79</sup> Rather, the roots of labor's decline lie in the legal-political context for unionization, the attitude of employers to unions, and the resulting lack of new organizing activities by the labor movement itself. American labor law is extremely restrictive and makes organizing very difficult. With the possible exception of the Wagner Act, most recent labor legislation has had the effect of placing various limits and restrictions on labor's ability to organize unorganized constituencies. To a great extent, this has "forced" the labor movement into a defensive posture, characterized by "fence-mending" and a relative neglect of organizing activities.<sup>80</sup> At the same time, American employers have been notoriously hostile to unions. There is evidence, moreover, that this hostility has become more pronounced and aggressive since the passage of the Taft-Hartley Act, with employers growing more willing to employ and more skilled at using a variety of legal and illegal measures to block unionization and encourage the decertification of existing unions.<sup>81</sup> Perhaps for this reason, the only real organizing successes of American labor since the early 1950s have been in the public sector, where the kind of virulent anti-union sentiment one finds among private sector employers has been less pervasive.<sup>82</sup>

The fact that it is very difficult to organize new constituencies in the United States and that American labor is very weak and on the defen-



sive is related in important ways to the failure of engineers' unionism. One of the most consistent findings in comparative research on white-collar and professional unionism is that there is a much greater likelihood that white-collar workers will join unions if the union movement as a whole is large and strong.<sup>83</sup> In this sense, the weakness of engineers' unionism is a symptom of the overall weakness of unionism in the United States. Moreover, research on engineers' attitudes to unions indicate that one of the central reasons for their opposition is their perception that unions are not very effective, are weak, and are corrupt.<sup>84</sup> Given this, and given the evidence that engineers' unions were not, in fact, particularly effective in improving the situation of their members, it is not surprising that American engineers have failed to be attracted to the ranks of organized labor.<sup>85</sup>

British employers reached a historic compromise with labor unions by the 1880s. As a recent historian of British industrial relations has noted:

By the 1880s it was possible to discern the emergence of a "system" of organised industrial relations in Britain, based on autonomous sectional collective bargaining based on representative associations of employers and workers. Authoritative declarations by ministers had made clear that this was the preferred method in which they had no intention of interfering. The state's professed role was to "hold the ring," maintaining what was asserted to be legal even-handedness between the contenders and intervening only to uphold law and order. For the employer the system required the recognition of the relevant trade union, acceptance of its representative character, pragmatic acknowledgement that his workers were conscious of grievances and claims of their own defining, and readiness to negotiate through mutually agreed procedures. For the union it required the observance of the basic laws, principles and conventions governing ownership, status and reward, and an eschewing of the "political" strike ...<sup>86</sup>

While we can point to breaks and transitions in this accommodation among state, labor and capital, British unions have never faced wholesale reconstruction, such as Japanese, Italian or German unions, but have rather enjoyed the most stable political environment of any working class. Evolution, not revolution or radical reform has marked the history of the British union environment. Such stability, legitimacy and integration into civil society and the state cannot be said to have figured in American labor history. For white-collar unions, emerging into this environment, trade unions were a part of the body politic, part of the British way of life.

The “voluntary” tradition has kept the state at arms’ length from industrial relations. This does not mean that legal restraints on trade unions have not been applied by a class-conscious judiciary at moments of strategic class conflict. But, such judicial creativity has been of a temporary nature. The major restrictions on British unions have occurred in the last decade under a Conservative government which has broken the post-war consensus among state, labor and capital, and legally weakened the bargaining power of unions. However, the Labor Party already pledged to repeal the more restrictive elements of this legislation, thus following the pattern of repeal long established in the British political climate. And, even the Tories under the most class-conscious post-war government have not smashed the unions or gone for a full deunionization strategy. They have simply made the legal environment more hostile, and kept up an ideological attack on “militant” unionism. Union density has remained high and there has been no attempt to introduce “right to work” American-style legislation or statutory controls on the formation and spread of trade unions. The disjunctures in the two union environments have been noted in a recent book:

The trajectory of American trade unionism is almost unparalleled in the advanced capitalist world, and only Japanese unions have managed to decline as consistently and for as long as the Americans... The violent hostility of American employers to trade unions has few parallels in Britain, and the US legal regime is markedly more hostile to unions and union recognition than in Britain. Finally, it remains the case that British (and most European) workers can reasonably expect to elect a pro-labour government at some time in their lives, whereas American workers have proved unable to sustain an independent workers’ party that could challenge the two bourgeois parties.<sup>87</sup>

## **Conclusion**

What conclusions can be drawn from the preceding comparison of British and American engineers’ unionism? First, and most important, our comparative analysis supports a “structural contingency” theory of union formation.

The simple argument that engineers are professionals and therefore are unlikely to unionize will not hold. As we have seen, neither British nor American engineers fit the “medical model” of professionalism. Both are “new” professions, in which the central reality is organizational

employment. The structural necessity to negotiate the terms and conditions of labor with employers thus confronts the engineer. While this does not make unions necessary or inevitable, it is this fact that plants the seed of unionism. Professional rhetoric and forms may exercise an influence over engineers' approach to unions, but they do not constitute a viable alternative to unionism; they cannot erase the realities of organizational employment, nor have they alone been responsible for the relative failure of engineering unions in the United States.

The pressures towards engineering unionism express themselves in specific national contexts and are strongly influenced by a variety of historical contingencies and cultural differences. Indeed, as we have argued, it is these contingencies that determine the precise ways and degree to which professionalism shapes the engineering community. We have emphasized a number of contingencies which have been important to the different histories of engineering unionism in Great Britain and the United States.

First, we have pointed to the importance of status. In the United States, engineers' higher status and closer ties to management have created obstacles to unionization and have helped buttress the claims of "business professional" ideology regarding the inappropriateness of unions. British engineers, in contrast, were defined as part of manual labor and tended to have early contact with unionism through their apprenticeship and early careers. The result was a much friendlier environment for the formation of engineering unions. We also have pointed to the question of timing – does engineers' unionism begin to take root before or after the emergence of strong professional patterns of recruitment and organization? While such patterns of recruitment and organization do not prevent unionization entirely, their existence clearly makes it somewhat more difficult.

The history of engineering unionism has also been shaped by factors external to the engineering profession, particularly by the labor movement as a whole. The approach of the union movement towards engineers is important. Where, as in the British case, unions developed a strong commitment to organizing white-collar constituencies, and where unions were flexible enough to accommodate the peculiar needs of professional employees, unions developed more easily. In the American case, the relative lack of organizing activities directed at professionals and other white-collar groups and the skepticism regarding their appropriateness as union members helped to impede the develop-

ment of engineers' unions. The politics of the labor movement also played a role; the fact that it was the more militant, egalitarian CIO that approached American engineers had a distinct chilling effect on attempts to organize these relatively conservative employees. Finally, and perhaps most importantly, the overall climate for organization has had profound effects on the fate of union organization. In the United States, where there is a strongly anti-union culture, militantly anti-union managers, and a restrictive legal framework for union organization, the labor movement has been placed on the defensive. The failure to organize engineers in the United States is, in part, a symptom of the weakness and lack of organizing activities by American labor. By contrast, British unions, while hardly popular with employers, have faced less resolute opposition and have not had to contend with complex statutory restrictions. They have, as a result, been seen as more legitimate and effective, and have had much greater success in extending union organization beyond the ranks of manual labor.

These conclusions regarding the importance of historical and national peculiarities for the emergence of engineers' unionism are broadly consistent with Bain's classic analysis of the development of white-collar trade unions.<sup>88</sup> Bain argues that it is precisely historical factors, and in particular the attitude of government and employers towards unionizing activities, that determines whether white-collar unions will succeed in developing and growing.

While we agree, up to a point, with Bain's analysis, we reject the view that engineers' unionism is purely a matter of historical contingency. On the contrary, we share Carter's critique of Bain – there are important structural factors that also condition the emergence of engineers' unionism.<sup>89</sup> Two, in particular, are worthy of emphasis here. First, to repeat, our analysis suggests that there is an underlying reality in the conditions of engineering employment creating tendencies toward unionization. Professional engineers are employees, and, as such, share the kinds of experiences that promote unionism – conflicts over wages, bureaucratic conditions of employment, job insecurity, and the like. These conditions do not automatically produce unionization; but they do place unionism on the agenda. There is a persistent question built into the engineers' situation – shall we unionize? – which does not go away even when, as in the United States, historical and national conditions are not conducive to union formation. Second, Carter is right to stress that the emergence of what he calls “middle class” unionism depends on the structural realities of class conflict. Where class conflict

becomes more intense, and the lines of conflict are more sharply drawn, the pressure on employees to unionize grows more pronounced. If we think back over the various periods in which engineers have attempted to organize, or have succeeded in doing so, it has tended to be periods in which levels of class conflict in society as a whole were relatively high. Moreover, as Carter points out, the historical factors emphasized by Bain depend, to some extent, on levels of class conflict. Why does the state become more favorable to union organization in certain periods? Clearly it is related to the pressures put on the government by employees and their organizations to create more favorable conditions. The failure of engineers' unionism in the post-war United States, and its concomitant success in Britain, are clearly related to the strong position of British labor and the weakness of its American counterpart.

In summary, it is our contention that the emergence of unionism depends on the interaction between the structural forces that promote engineers' unionism and specific national and historical factors that either assist or impede it. This has important implications for the labor movement, in a period when unions generally have found that the ground is shifting beneath them and when the American labor movement in particular is on the verge of being pronounced dead.

Specifically, our analysis points to the fact that the union movement can incorporate non-traditional, ostensibly "middle class" employees such as professional engineers. First, we have argued that there exist in all industrial capitalist societies structural pressures towards unionization among such employees. Moreover, it is also true that the attitude of the labor movement, and the tactics it employs, do have an effect on the success or failure of the unionization project. In other words, if the labor movement approaches professional engineers on the basis of a real understanding of their needs and attitudes (as seems to have been the case in Great Britain), the chances for successful unionization are there. This is not to say that it is only a matter of the labor movement "waking up" and organizing engineers. On the contrary, conditions do vary from one country to the next, making the task of organizing more difficult in some cases. In the United States, the greater social status of engineers and the existence of a strong, cohesive anti-union strategy among managers are among the many factors that will continue to impede British-style engineers' unions. Nevertheless, our analysis does pose a challenge to those observers of the labor movement who contend that changes in the make-up of the labor force (particularly the

shift towards professional and service labor) have made unions obsolete. It may be difficult to organize professional workers, as, indeed, it is to organize *any* workers, but there is no reason to believe that they cannot become part of the labor movement.

Of course, the formation of engineering unions does not, in itself, make engineers an unambiguous part of the labor movement. Students of “middle class” unions in general, and engineers’ unions in particular, have argued that such unions are “different,” that they tend to define their interests as different from those of manual laborers and to prefer exclusivism to inclusion in blue-collar unions.<sup>90</sup> There can be no denying the exclusivism of engineers’ unions. In both the United States and Great Britain, they have exhibited a strong preference for separate organizations, as well as a preoccupation with salary differentials, and a relative political conservatism. Indeed, we have argued that one of the keys to the success of British engineers’ unionism was the early emergence of “craft” models of unionization among engineers and the ability and willingness of general unions to accommodate this kind of exclusivism even when engineers’ unions were incorporated into larger labor organizations.

Whether this represents a distinctively middle-class style of unionism is questionable, however. Although Carter tends to argue that it does, he also concedes that not all unions of manual workers are militant, egalitarian, or politically left-wing.<sup>91</sup> There is a strong resemblance between engineers’ unionism and traditional conservative craft unionism. This should be apparent from the British engineers’ attraction to this kind of craft union and from the fact that, in the case of the United States, it was the CIO, not the AFL, that was most frightening to professional engineers.

Moreover, the dynamics of unionization, and the historical evolution of trade unionism as a whole, have created pressures that tend to erode the exclusivist stance of white-collar unions. As Sturmthal has noted, once white-collar unions develop, even if they initially emerge as “separatist” organizations, it is surprisingly easy to develop cooperative relationships between them and conventional manual unions.<sup>92</sup> Some of the remaining American engineering locals have affiliated with the AFL-CIO, as have teachers’ unions and other organizations of white-collar employees. Perhaps more importantly, recent events in Britain demonstrate a decline in the viability of the exclusivist project and the corresponding fusion of white-collar and blue-collar units in con-

glomerate unions. Political divisions still remain, but the apparent structural difference between white-collar unions and other unions has clearly diminished.<sup>93</sup>

It would be naive to suggest that all of the differences between engineering unions and blue-collar unions are likely to disappear in the near future. Nor can we point to evidence that American engineers are about to emulate their British counterparts by joining the union movement. What we can say, however, is that the failure of American engineers to join unions is the result of historical, not structural factors. Our comparison of the British and American cases suggests that, while engineers are not “just like” other workers, there exist structural pressures towards the unionization of professional engineers in all industrial capitalist societies. As the labor force in industrial capitalist societies shifts further towards professional and service employees, the fate of the labor movement may depend on its ability to make the most of the opportunities for organizing these new constituencies.

## Notes

1. See Michael Goldfield, *The Decline of Organized Labor in the United States* (Chicago: University of Chicago Press, 1987) for a critique of the view that labor's decline is attributable to such structural changes in the economy.
2. For a good summary of the debate about organizing the high-technology sector, see J. Gregg Robinson and Judith McIlwee, “Obstacles to Unionization in High-Tech Industries,” *Work and Occupations* 16 (1989): 115–136.
3. George Strauss, “Professional Or Employee-Oriented: Dilemma for Engineering Unions,” *Industrial and Labor Relations Review* 17 (1964): 519–533. For a comparable argument regarding the British case, see Kenneth Prandy, *Professional Employees* (London: Faber and Faber, 1965).
4. See Joel Seidman and Glen Cain, “Unionized Engineers and Chemists: A Case Study of a Professional Union,” *Journal of Business Studies* 37 (1964): 238–251 and Archie Kleingartner, “Professionalism and Engineering Unionism,” *Industrial Relations* 8 (1969), 224–235. For a general critique of the orthodox view of the relationship between professionalism and unionism see Magali Sarfatti Larson, *The Rise of Professionalism: A Sociological Analysis* (Berkeley: University of California Press, 1977), especially 156–157.
5. See, for example, Robert Carter, *Capitalism, Class Conflict and the New Middle Class* (London: Routledge, 1985); Richard Walton, *The Impact of the Professional Engineering Union* (Boston: Division of Research, Graduate School of Business Administration, Harvard University, 1961).
6. Terence Johnson, *Professions and Power* (London: The Macmillan Press, 1971).
7. Andrew Abbott, *The System of Professions: An Essay on the Expert Division of Labor* (Chicago: University of Chicago Press, 1988), especially ch. 3.
8. For a variety of perspectives on this issue, see Charles Derber, editor, *Professionals*

- As Workers: Mental Labor in Advanced Capitalism (Boston: G. K. Hall, 1982); Magali Sarfatti Larson, "Proletarianization and Educated Labor," *Theory and Society* 9 (1980): 130–177; Martin Oppenheimer, "The Proletarianization of the Professional," in Paul Halmos, editor, *Professionalization and Social Change* (Staffordshire: University of Keele, 1973), 213–227.
9. See, for example, Sherry Gorelick, "Class Relations and the Development of the Teaching Profession," in Dale Johnson, editor, *Class and Social Development* (Beverly Hills: Sage Publications, 1982), 203–224 and Henry Miller, "Academics and the Labor Process," in Chris Smith, David Knights and Hugh Willmott, editor, *White-Collar Work: The Non-Manual Labour Process* (London: Macmillan, 1991), 109–137.
  10. For example, the Wickenden Report on engineering education, published in 1930, questioned the appropriateness of licensing: "The licensing of engineers may restrict the use of titles and bestow certain legal privileges, but it can not possibly create a monopoly of the technical applications of science under economic control. The state may require a certain amount and kind of education of men who are licensed as engineers, but should not exclude others from technical employment." Society for the Promotion of Engineering Education, *Report of the Investigation of Engineering Education, 1929–1930* (Pittsburgh: University of Pittsburgh Press, 1930), 1058.
  11. See Monte Calvert, *The Mechanical Engineer in America, 1830–1910* (Baltimore: The Johns Hopkins University Press, 1967) and David Noble, *America By Design* (New York: Alfred A. Knopf, 1977) for discussions of the early history of engineering education.
  12. Robert Zussman, *Mechanics of the Middle Class* (Berkeley: University of California Press, 1985), 138.
  13. Chris Smith, *Technical Workers: Class, Labour and Trade Unionism* (London: Macmillan, 1987).
  14. See Joel Gerstl and S. P. Hutton, *Engineers: the Anatomy of a Profession* (London: Tavistock Publications, 1966) and H. B. Watson, "Organisational Bases of Professional Status: A Comparative Study of Engineering Professions," unpublished Ph.D. dissertation, University of London, 1975 for the British case; for the United States, see Robert Perrucci and Joel Gerstl, *Profession Without Community: Engineers in American Society* (New York: Random House, 1969).
  15. William LeBold, Robert Perrucci and Warren Howland, "The Engineer in Industry and Government," *Journal of Engineering Education* 56 (1966): 252; Robert Perrucci, "Engineering: Professional Servant of Power," in Eliot Freidson, editor, *The Professions and their Prospects* (Beverly Hills: Sage Publications, 1971), 132.
  16. Peter Whalley, *The Social Production of Technical Work* (London: Macmillan, 1986), 156.
  17. Larson, *The Rise of Professionalism*, 155.
  18. Walton, *The Impact*, especially p. 42; James Kuhn, *Engineers and Their Unions*, in A. A. Blum et al., editor, *White Collar Workers* (New York: Random House, 1971), 84.
  19. Walton, *The Impact*, ch. 1.
  20. Herbert Northrup, *Unionization of Professional Engineers and Chemists* (New York: Industrial Relations Counsellors, 1946), 22; Everett Kassalow, "White Collar Unionism in the United States," in Adolf Sturmthal, editor, *White Collar Trade Unions* (Urbana: University of Illinois Press, 1967), 305–364.
  21. E.g., Walton, *The Impact*, 51–52.



22. *Ibid.*, 42.
23. Hugh Clegg, *Trade Unionism Under Collective Bargaining* (Oxford: Basil Blackwell, 1976).
24. B. C. Roberts, Ray Loveridge, and John Gennard, *Reluctant Militants* (London: Heinemann Educational Books, 1972); Smith, *Technical Workers*.
25. Roberts *et al.*, *Reluctant Militants*, 62. Contrast the more determined attitude towards securing technicians in the ETU, especially when this craft union changed its name to the Electronics, Electrical and Plumbing Trade Union in 1967, but even then these technicians only accounted for less than 5% of total membership.
26. Chris Smith, "Engineers, Trade Unionism and TASS," in Peter Armstrong, et al., editor, *White Collar Workers, Trade Unions and Class* (London: Croom Helm, 1986).
27. Linda Dickens, "UKAPE: A Study of a Professional Union," *Industrial Relations Journal* 3 (1972): 2–16; Colin Gill, R. S. Morris and Jack Eaton, "APST: The Rise of a Professional Union," *Industrial Relations Journal* 8 (1977): 50–61; Ed Snape and Greg Bamber, "Managerial and Professional Employees: Conceptualising Union Strategies and Structures," *British Journal of Industrial Relations* 27 (1989): 93–110.
28. Dickens, "UKAPE."
29. Smith, "Engineers, Trade Unionism and TASS."
30. "Many of them found the non-political stance of EPEA attractive, in contrast to the more partisan position taken by TASS and ASTMS, and approached the Association to see whether it could extend its membership," Judy Slinn, *Engineers In Power: 75 Years of the EPEA* (London: Lawrence and Wishart, 1989), 201.
31. Ian Glover and Michael Kelly, *Engineers in Britain* (London: Allen and Unwin, 1987), 202–203.
32. Robin Roslender, "The Engineers' and Managers' Association," *Industrial Relations Journal* 14 (1983): 41–51; see also Snape and Bamber, "Managerial and Professional Employees."
33. Snape and Bamber, "Managerial and Professional Employees," 98.
34. The Engineering Council, "Guidance Statement on the Engineering Council Registrants and Trade Union Membership," (London: the Engineering Council, July 1986).
35. Bob Carter, "Politics and Process in the Making of Manufacturing, Science and Finance," *Capital and Class* 45 (1991): 35–71 discusses the recent history of MSF. He notes that the divisions within the union persist and questions whether the strategy of union merger has been as successful as anticipated. However, he concedes that merger does yield real benefits; indeed, he notes speculation that MSF may eventually become part of an even larger merger with the TGWU.
36. Whalley, *The Social Production of Technical Work*, 183.
37. *Ibid.*, 57; See also Peter Armstrong, "Engineers, Managers and Trust," *Work, Employment and Society* 1 (1986): 421–440.
38. Edwin Layton, *The Revolt of the Engineers* (Baltimore: The Johns Hopkins University Press, 1986); Peter Meiksins, "The Revolt of the Engineers' Reconsidered," *Technology and Culture* 24 (1988): 219–246.
39. Peter Meiksins, "Professionalism and Conflict: The Case of the American Association of Engineers," *Journal of Social History* 19 (1986): 403–421.
40. Eldon Dvorak, "Will Engineers Unionize?" *Industrial Relations* 2 (1963): 48–54.
41. Fred Goldner and R. Richard Ritti, "Professionalism As Career Immobility," *American Journal of Sociology* 72 (1967): 489–502.

42. See Goran Ahlstrom, *Engineers and Industrial Growth* (London: Croom Helm, 1982) for a useful analysis of engineers in comparative perspective.
43. We discuss the different "organization" of engineers in six different industrial capitalist countries in Chris Smith and Peter Meiksins, *Engineering Class Politics* (London: Verso Books, forthcoming).
44. See Alfred Chandler, Jr., "The Growth of the Transnational Firm in the United States and the United Kingdom: A Comparative Analysis," *Economic History Review* 23 (1980): 396–410 and Bernard Elbaum and William Lazonick, *The Decline of the British Economy* (Oxford: The Clarendon Press, 1986).
45. Reinhard Bendix, *Work and Authority in Industry* (Berkeley: The University of California Press, 1956).
46. Calvert, *The Mechanical Engineer*.
47. Noble, *America By Design*.
48. Ahlstrom, *Engineers and Industrial Growth*, 85.
49. See Martin Weiner, *English Culture and the Decline of the Industrial Spirit, 1850–1980* (Cambridge: Cambridge University Press, 1981).
50. See Whalley, *The Social Production of Technical Work*; Smith, *Technical Workers*.
51. Armstrong, "Engineers, Managers and Trust."
52. See Weiner, *English Culture*; Perry Anderson, "Origins of the Present Crisis," *New Left Review* 23 (1964). But, cf. Ellen Meiksins Wood, *The Pristine Culture of Capitalism: A Historical Essay on Old Regimes and Modern States* (London: Verso Books, 1992). Wood raises important questions about the view that the peculiarities of the English political economy reside in its not being "capitalist enough."
53. William Lazonick, "Strategy, Structure and Management Development in the United States and Great Britain," mimeo, Harvard University, 1985.
54. Armstrong, "Engineers, Managers and Trust;" Glover and Kelly, *Engineers in Britain*; Whalley, *The Social Production of Technical Works*; Kevin McCormick, "Engineering Education in Britain and Japan: Some Reflections on the Use of 'the Best Practice' Models in International Comparisons," *Sociology* 22 (1988): 583–605.
55. *The Guardian*, "Graduates in Engineering Shun Profession," 8 December 1989.
56. Meiksins, "The 'Revolt of the Engineers' Reconsidered;" idem, "Professionalism and Conflict."
57. Andrew Fraser, *Employment and Earnings in the Engineering Profession, 1929–1934* (Washington, D.C.: US Department of Labor, Bureau of Labor Statistics Bulletin #682, U.S. Government Printing Office, 1941).
58. A. Michael McMahon, *The Making of a Profession: A Century of Electrical Engineering in America* (New York: The IEEE Press, 1984); Bruce Sinclair, *A Centennial History of the American Society of Mechanical Engineers, 1880–1980* (Toronto: University of Toronto Press, 1980); Peter Meiksins, "Engineers and Managers: An Historical Perspective on an Uneasy Relationship," paper presented to the American Sociological Association, August 1989.
59. McCormick, "Engineering Education in Britain and Japan," 589.
60. Gerstl and Hutton, *Engineers*, 10.
61. Slinn, *Engineers in Power*, 43.
62. Smith, "Engineers, Trade Unions, and TASS."
63. Timothy May, "Middle Class Unionism," in Roger King and Neill Nugent, editors, *Respectable Rebels: Middle Class Campaigns in Britain in the 1970s* (London: Hodder and Stoughton, 1979), 112.
64. The Engineering Council, "Guidance Statement."

65. Kleingarter, "Professionalism and Engineering Unionism."
66. See Sturmthal, *White Collar Trade Unions*; Bernard Goldstein, "The Perspective of Unionized Professionals," *Social Forces* 37 (1959): 323–327.
67. For overviews of the history of the AAE, see William Rothstein, "The American Association of Engineers," *Industrial and Labor Relations Review* 22 (1968): 48–72; Meiksins, "Professionalism and Conflict." The latter article presents a more extended statement of the themes outlined in this paragraph.
68. Jean McKelvey, *AFL Attitudes Toward Production, 1900–1932* (Westport, Conn.: Greenwood Press, 1974); Milton Nadworny, *Scientific Management and the Unions, 1900–1932* (Cambridge, Mass.: Harvard University Press, 1955).
69. Jurgen Kocka, *White Collar Workers in America, 1890–1940* (London: Sage Publications, 1980), 228–230.
70. *Ibid.*; Mark McColloch, *White Collar Workers in Transition* (Westport, Conn.: Greenwood Press, 1983).
71. Sturmthal, *White Collar Trade Unions*, 377.
72. Freeman and Medoff, *What Do Unions Do?* (New York: Basic Books, 1984), 228–230; Goldfield, "The Perspective of Unionized Professionals"; this is also the central argument in Kim Moody, *An Injury to All* (London: Verso Books, 1989).
73. Kocka, *White Collar Workers in America*, 228–230.
74. Dvorak, "Will Engineers Unionize?" 49–54.
75. Kocka, *White Collar Workers in America*, 220–221.
76. J. E. Mortimer, *A History of the Association of Engineering and Shipbuilding Draughtsmen* (London: The AESD, 1960); Slinn, *Engineers in Power*.
77. George Sayers Bain, *The Growth of White-Collar Unionism* (Oxford: the Clarendon Press, 1970), 111.
78. Goldfield, *The Decline of Organized Labor*.
79. *Ibid.*
80. Moody, *An Injury to All*.
81. Freeman and Medoff, *What Do Unions Do?*, 230–239.
82. McColloch, *White Collar Workers in America*.
83. Sturmthal, *White Collar Trade Unions*, 376.
84. Kleingartner, "Professionalism and Engineering Unionism"; Gregory Latta, "Union Organization Among Engineers: A Current Assessment," *Industrial and Labor Relations Review* 35 (1981): 29–42.
85. Walton, *The Impact*, 71.
86. Alan Fox, *History and Heritage* (Boston: Allen and Unwin, 1985), 174.
87. John Kelly, *Trade Unions and Socialist Politics* (London: Verso Books, 1988), 282.
88. Bain, *The Growth of White-Collar Unionism*.
89. Bob Carter, *Capitalism, Class Conflict and the New Middle Class*, 163–168.
90. *Idem.*, "Class Militancy and Union Character: A Study of the Association of Scientific, Technical and Managerial Staffs," *The Sociological Review* 27 (1979): 297–316.
91. *Idem.*, *Capitalism, Class Conflict and the New Middle Class*.
92. Sturmthal, *White Collar Trade Unionism*, 384.
93. Carter, "Politics and Process in the Making of Manufacturing, Science and Finance," discusses the speculation that British conditions may eventually produce a merger between the white-collar MSF and the giant "general" union, the TGWU.