

AC 2009-686: THE SOCIOLOGY OF PROFESSIONS: APPLICATION TO CIVIL ENGINEERING

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The Sociology of Professions: Application to Civil Engineering

Abstract

This paper applies the sociological theory of professions, as espoused by Abbott and Freidson, as a conceptual framework to assess the critical issues associated with the ongoing American Society of Civil Engineers (ASCE) Policy Statement 465 initiative. The sociology of professions provides an objective basis for judging the appropriateness of various aspects of Policy 465 implementation, such as publication of the civil engineering body of knowledge, raising educational standards for licensure, collaboration with other engineering disciplines, and the role of university-based research. This analysis demonstrates that Freidson's model of professionalism is highly applicable to civil engineering; that most aspects of Policy Statement 465 implementation are consistent with the model; and that this initiative is contributing to the strength of the profession as intended. Based on this analysis, the authors derive concomitant recommendations for the future direction of the "Raise the Bar" initiative.

Background

In 1988, sociologist Andrew Abbott revolutionized the study of occupations with the publication of his groundbreaking book, *The System of Professions: An Essay on the Division of Expert Labor*.¹ Abbott's work effectively created a theory of professions, which profoundly influenced subsequent sociological research in this area. In more recent years, Eliot Freidson incorporated and expanded upon Abbott's work. In *Professionalism: the Third Logic—On the Practice of Knowledge*, Freidson articulated a comprehensive theoretical model for professionalism—a rich conceptual framework, within which the professions can be analyzed and better understood.²

Ten years after *The System of Professions* first appeared in print, the American Society of Civil Engineers (ASCE) initiated a far-reaching effort to better prepare civil engineers for entry into the civil engineering profession.³ This effort ultimately resulted in the adoption of Policy Statement 465 by the ASCE Board of Direction. The most recent version of this policy statement, published in October 2004, is as follows:

The American Society of Civil Engineers supports the attainment of a Body of Knowledge for entry into the practice of civil engineering at the professional level. This would be accomplished through the adoption of appropriate engineering education and experience requirements as a prerequisite for licensure.⁴

In conjunction with the implementation of Policy Statement 465, ASCE initiated a broad-based effort to formally define the profession's body of knowledge (BOK). The *Civil Engineering Body of Knowledge for the 21st Century* was first published in January 2004,⁵ and a revised edition appeared in February 2008.⁶ A concurrent analysis showed that the civil engineering BOK cannot be adequately addressed in the current four-year undergraduate degree program; thus, the "Raise the Bar" initiative is also attempting to influence professional licensure laws, such that a master's degree or equivalent will become the academic prerequisite for entry into the civil engineering profession.⁷ (A more comprehensive account of the development and implementation of ASCE Policy Statement 465 can be found in Reference 8.)

For the past decade, deliberations on the implementation of Policy Statement 465 have been characterized by a cacophony of claims and opinions, often contradictory, about the strategic direction of the profession; the nature and content of the BOK; the respective roles of educators, practitioners, technologists, and technicians; the importance of licensure; the relationship between civil engineering and other engineering disciplines; the role of research; and other related issues. These claims tend to be based largely on anecdotal evidence or personal experience. Although the sociology of professions has frequently been applied to other professions,^{9,10} it has never been invoked to inform the ongoing discussion of Policy Statement 465. Yet the sociology of professions—in particular, the work of Abbott and Freidson—provides a powerful, logically consistent framework within which ongoing efforts to strengthen the civil engineering profession can be better understood.

Purpose and Scope

The purposes of this paper are (1) to summarize key elements of the sociological theory of professions, as espoused by Abbott and Freidson, (2) to use the sociology of professions as a conceptual framework to assess the critical issues associated with ASCE’s Policy Statement 465 initiative, and (3) to provide concomitant recommendations for the future direction of the “Raise the Bar” initiative. This analysis will demonstrate that Freidson’s model of professionalism is applicable to civil engineering; that most aspects of Policy Statement 465 implementation are consistent with the model; and that this initiative is contributing to the strength of the profession, largely as intended.

In order to limit the scope of this paper, the authors have chosen to focus entirely on the work of Abbott and Freidson. We do not claim that their models are universally accepted, and we acknowledge that other valid perspectives on the sociology of professions exist.^{11,12} Nonetheless, we suggest that the theories of Abbott and Freidson are particularly applicable to civil engineering and thus constitute an appropriate basis for the focused analysis that follows.

The Sociology of Professions

In *The System of Professions*, Andrew Abbott explores how modern societies institutionalize expertise and control specialized work through professionalism. Most previous sociological studies of professionalism tended to look at individual professions in isolation. Abbott’s approach is unique, in that he applies systems analysis concepts to characterize the professions as interdependent elements of a complex, dynamic economic system. At the heart of Abbott’s model is the concept of *jurisdiction*—the link between a profession and its work. Within the system of professions, each profession claims a jurisdiction based on its associated body of expert knowledge. According to Abbott, the professions are perpetually in competition with each other over the boundaries between, and authority within, their respective jurisdictions. Ultimately, the outcomes of these jurisdictional disputes determine whether professions prosper, combine, divide, stratify, or fail.

In *Professionalism: the Third Logic*, Eliot Freidson builds upon Abbot’s model to show how professions fit within the broader context of an economic system. In Freidson’s formulation, the

occupations that comprise an economic system are associated with three fundamental paradigms for the division of labor:

- The **free market**, first articulated by Adam Smith in *The Wealth of Nations*, is an economic system in which the division of labor is determined by consumers.
- A **bureaucracy**, as defined by Max Weber, is an entity in which the division of labor is determined by an organizational hierarchy.¹³
- A **profession** is an occupation in which the division of labor is determined by the members of the occupation itself.

Freidson's ideal-typical profession has the following five interdependent characteristics:¹⁴

- Specialized work, grounded in an officially recognized body of knowledge that is based on abstract concepts and requires the exercise of discretion
- Exclusive jurisdiction in a division of labor created and controlled by the occupation
- A sheltered position in the labor market, based on qualifying credentials created by the occupation
- A formal training program that lies outside the labor market, produces the credential, is controlled by the occupation, and is associated with higher education
- An ideology that serves one or more transcendent values and claims greater commitment to doing good work than to economic reward

It is important to recognize that all three of these paradigms—free market, bureaucracy, and profession—are defined as ideal types. In the real world, no market, organization, or profession corresponds exactly to the corresponding theoretical model. Indeed, because no two real-world professions are alike, it follows that *no* theoretical model can perfectly reflect the characteristics of *all* real-world professions. The strength of Freidson's model is that its formulation relies primarily on logic (hence, the "third logic" of his book's title). The result is a stable, rationally derived conceptual framework that can effectively organize our view of professionalism, independent of highly variable real-world circumstances.

The utility of this ideal-typical model is substantial. Freidson uses it as the basis for evaluating the strength of a given real-world profession at a given point in time: *the strength of a profession is indicated by the extent to which its characteristics reflect those of the ideal-typical model.*

As such, Freidson's model also provides an effective basis for evaluating the implementation of ASCE's Policy Statement 465. Any aspect of the "Raise the Bar" initiative that tends to move the civil engineering profession closer to Freidson's ideal-typical model can be regarded as strengthening the profession; any aspect that contradicts the model is likely to weaken the profession. In the following sections, the authors apply this approach to the civil engineering profession in general, and to the critical issues associated with Policy Statement 465 in particular.

The Body of Knowledge

In both Abbott's system of professions and Freidson's ideal-typical model, a body of specialized knowledge is central to professionalism. In general, a profession's BOK is the principal basis for its jurisdictional claims *vis-à-vis* other professions. Thus ASCE's decision to formally define and publish the civil engineering BOK can reasonably be expected to strengthen the profession by strengthening its claim over the jurisdiction articulated in the published BOK.

There are potential risks in formally defining a BOK, however. The system of professions, as defined by Abbott, is dynamic, with jurisdictional boundaries constantly in flux. Formally defining a BOK may hinder the profession's ability to respond to threats or to claim new jurisdictions. This risk is mitigated by ASCE's willingness to update its BOK on a regular basis, as evidenced by publication of the second edition just four years after the first.

Merely having a BOK is not sufficient to guarantee the strength of a profession. The BOK of an ideal-typical profession must be based on abstract concepts or theories, and the application of these theories must require the exercise of considerable discretion.

The application of discretionary judgment is absolutely critical to professionalism. If decisions regarding a profession's disciplinary area of expertise can be made without the exercise of discretion, then the professional's role is greatly diminished and the profession is weakened as a result. Engineering is inherently susceptible to this tendency, particularly as a result of the continual trend toward automation and codification of engineering analysis and design processes.

From this perspective, the civil engineering BOK's enhanced emphasis on theoretical subjects—mathematics, natural science, and engineering science—is a positive change. The requirement for enhanced technical depth, attained through master's-level study, is also a significant source of strength, as it reflects a trend toward a higher level of specialized knowledge. The BOK's emphasis on risk and uncertainty is an appropriate counter to the notion that engineering knowledge is "too exact."¹⁵ Enhanced professional practice breadth strengthens the profession only insofar as the specified topics represent specialized disciplinary knowledge; e.g., bidding, quality-based selection, and construction project management. General knowledge of communication skills, public policy, business, and similar topics are of considerably less value in strengthening the BOK, because they are neither theoretical nor specific to the civil engineering discipline.

Freidson also notes that an ideal professional education is generally accompanied by "book learning in the academic or liberal studies of the ideas, theories, and works treasured by the cultivated elite."¹⁶ Most professions claim that such studies of the liberal arts provide the intellectual foundation for learning the professional BOK; in practice, these studies are at least as important for preserving the social status desired by professionals. Regardless of their utility, these subjects are emphasized as foundational outcomes in the civil engineering BOK, and this emphasis is consistent with the model of ideal-typical professionalism.

The Professional Labor Market Shelter and Licensure

The most fundamental characteristic of professionalism, control of work by the occupation itself, requires the establishment of a *labor market shelter*—a monopoly over the specialized work performed by members of the profession. In Freidson’s ideal-typical model, the obligation to employ only qualified professionals to perform designated work is mandated by law. The mechanism for this mandate is a *credential*, which is created and approved by the profession.

This labor market shelter is intended to protect the profession from external competition with other occupations, as well as internal competition between members of the profession. Internal competition is controlled through restraints on competitive bidding and advertising, through the establishment of minimum fees, and by restricting the supply of practitioners. The profession controls its supply of practitioners by setting rigorous standards for admission into professional schools and for attainment of the credential. Professional labor market shelters are often viewed as inappropriate by consumers; yet they are absolutely essential for the viability of professionalism and, therefore, they ultimately benefit society.

In engineering, the credential is a professional license, and the labor market shelter is institutionalized through laws requiring licensure for certain kinds of engineering work. Because these laws reinforce occupational control of work, they tend to strengthen the segment of the engineering profession to which they apply.

In the context of Freidson’s model, the existence of an “industrial exemption,” by which engineers are permitted to practice without a license in manufacturing firms, is highly damaging to the strength of the engineering profession.¹⁷ Engineers practicing under an industrial exemption have effectively surrendered control of their work to the organizational hierarchy. In doing so, they have associated themselves more closely with Freidson’s “second logic”—the bureaucracy—than with professionalism.

Viewed from this perspective, ASCE’s continued emphasis on professional licensure—in Policy Statement 465 itself, in the published BOK, and in ongoing efforts to strengthen state licensure laws—is both exemplary and essential. The notion of raising the standard for credentialing as a mechanism for enhancing the strength of the profession is fully consistent with Freidson’s model and can reasonably be expected to produce the desired effect over the long term.

Organizational Issues and the Engineering Disciplines

Freidson describes engineering as an inherently weak profession, in part because of the organizational context in which engineering work is typically performed. Because the engineer’s work generally cannot be translated into a physical product without large amounts of capital, engineers tend to be dependent on large privately owned organizations. In manufacturing, engineering typically represents just one specialty in a much larger division of labor. Historically, engineers’ efforts to professionalize have been opposed by governments and industries, which seek to preserve their flexibility while obtaining technical skills at the lowest possible cost. Thus, unlike physicians, lawyers, and accountants, engineers generally have not

been able to dominate the organizations in which they work. Freidson cites one notable exception to this rule, however:

Today there are a few powerful and wealthy engineering corporations that are analogous to the autonomous professional organizations of large law and accounting firms, but by and large such independent practice in industrial nations is rare *for all but civil engineers* [emphasis added].¹⁸

Freidson provides no explanation for the exceptional nature of civil engineering. We suggest, however, that the apparent strength of the civil engineering profession in comparison with other engineering disciplines may be attributed to:

- The association of civil engineering with public work, resulting in a stronger legally sanctioned labor market shelter
- The resulting emphasis on licensure in civil engineering and, in comparison with other engineering disciplines, the relatively smaller proportion of practitioners working under an industrial exemption
- The structure of the construction industry, in which the purely professional functions of planning and design tend to be contractually separate from the craft-oriented function of construction

Regardless of the cause, it is evident from Freidson's analysis that *civil engineering is different*. Thus it is hardly surprising that professional societies representing other engineering disciplines have occasionally opposed ASCE's "Raise the Bar" initiative. Manufacturing-oriented engineering disciplines are closely tied to the commercial industries they serve—and these industries have historically opposed the professionalization of engineers. Freidson observes that the engineering disciplines' ability to act in concert with each other is limited by "fragmentation into a variety of virtually unrelated specialties practicing in so many industrial sectors that few common interests link its members."¹⁹ Therefore, in implementing Policy 465, it may be unrealistic for ASCE to expect cooperation from all but closely related disciplines like environmental engineering.

Role of the University

A key aspect of professionalism is its connection to the university—a connection that distinguishes professionals from technicians (who are trained in "technical institutes") and craftsmen (who are trained on the job). In the ideal-typical model, professional education is fully controlled and conducted by members of the occupation, although these professionals are not expected to work in the labor market.

Ideally, university programs:

- Produce the professional credential
- Formalize the BOK by incorporating it into the curriculum
- Provide the educational basis for jurisdictional claims in relation to other professions
- Refine and expand the BOK through research
- Serve as the primary source of profession's status and public identity

- Contribute to students' commitment to the profession as a career
- Contribute to a shared identity and feeling of community among members of the profession

Of all these purposes, Freidson places particular emphasis on the importance of research. Strengthening and expanding the BOK is seen as a critical tool for defending and expanding the profession's jurisdiction. In the civil engineering community, research is sometimes portrayed as being independent of, or even contrary to, the ASCE Policy 465 initiative. The published civil engineering BOK pays relatively little attention to research. Freidson's model suggests that research must be fully incorporated into the initiative, as a critically important driver for ensuring the long-term vitality of the BOK.

Differentiation within the Profession

According to Freidson's model, the continual expansion of knowledge and the invention of new skills and practices often results in differentiation within a professional jurisdiction. Segments of the professional BOK tend to become defined as specialties, and the associated specialists sometimes compete with each other for jurisdiction. Thus a mature profession cannot be regarded as a single community of interest. Rather, it is a highly differentiated collection of sub-communities, which may hold contradictory policy positions. In this context, the ability of a professional society to exercise control over its associated occupation is highly constrained, because no society can truly represent the entire profession.

In civil engineering, the tendency toward differentiation can clearly be seen in the establishment of ASCE's eight technical specialty institutes.²⁰ The tendency for professional sub-communities to go their own way can be seen in the National Council of Structural Engineers Associations (NCSEA) agenda to enhance structural engineering technical depth within the bachelor's-level curriculum, even as ASCE promotes technical specialization at the master's level.²¹ Freidson's message is that such conflicts are inevitable and that conflicting policy positions must be considered legitimate, as long as they are based on professional criteria. Given that no professional society can control an entire profession, ASCE must continue to accommodate conflicting viewpoints within the community and advance its agenda through persuasion and collaboration.

Implications of Ideology

Freidson's model identifies a *professional ideology* as one of the five principal characteristics of an ideal-typical profession. Because a profession can only exercise power through persuasion, ideology is a critically important tool for justifying the profession's privileged position in an economic system—and for opposing tendencies toward *consumerism* (the ideology of the free market) and *managerialism* (the ideology of the bureaucracy).

The ideology of an ideal-typical profession includes the following assertions:

- Professional work is intrinsically gratifying because it is interesting, challenging, and discretionary in nature. Compensation is not the professional's principal motivation for

work. (This concept is contrasted with free markets, in which work is inherently unpleasant, and workers work to make money; and bureaucracies, in which workers seek to maintain their positions in the firm.)

- Professional work requires the exercise of discretionary judgment in response to unique problems. Standardized solutions are not possible for the types of problems that professionals are called upon to solve.
- Professional work involves the application of esoteric concepts that are not easily understood by the consumer and that are too complex to be managed by those who have only general knowledge.
- Professionalism entails service, not only to a client, but also to transcendent values. Service to transcendent values may require the professional to act against the immediate interests of the client, thus implying a certain independence of judgment rather than mere faithful service.

Freidson notes that medicine, law, and the clergy have attained the strongest status as professions, in part, because of their close association with the transcendent values of health, justice, and salvation. By contrast, he claims, the ideology of engineering is weak, because “the only distinctive value to which the tasks of engineering can be attached is *efficiency*.”²² As a transcendent value, efficiency can never be truly compelling because it is only a means to an end—and the end state of an efficient process might just as easily be evil as good.

From the ideological perspective, civil engineers would certainly claim a close association with the transcendent values of *public safety* and *quality of life*. Indeed, ASCE has long emphasized the profession’s strong contributions in these areas. Yet the profession has generally been unable to gain broad public awareness of its connection to public safety and quality of life and thus has been unable to benefit from this connection.* More recently, formal incorporation of *sustainability* into the civil engineering BOK represents another potential source of ideological strength. Sustainability can be clearly linked to the long-term survival of our ecosystem—a transcendent value of considerable appeal. It remains to be seen whether the linkage between civil engineering and sustainability can be firmly established in the public mind.

Another important ideological dimension of the Policy 465 initiative is its leaders’ consistent refusal to associate raising the educational bar with increased compensation for civil engineering professionals. This refusal is fully consistent with the notion that professionals are motivated primarily by the intrinsically interesting nature of their work. As Freidson demonstrates through historical examples, a public perception that professional work is being done for economic self-interest can have a highly corrosive effect on the strength of the profession.

Other Issues

Freidson’s model also provides useful perspectives on the following aspects of Policy 465 implementation:

* It is noteworthy that even Freidson does not recognize a connection between the civil engineering profession and the transcendent values of public safety and quality of life. He does, however, discuss engineers’ persistent difficulties in establishing a clear, compelling public image.

- Tension between practitioners and educators within a profession
- The role of technologists and technicians in the division of labor
- The connection between public image and the strength of a profession

Discussion of these topics is beyond the scope of this paper but will be addressed by the authors in future research.

The Assault on Professionalism

The Third Logic concludes with a discussion of an ongoing assault on professionalism, which is characterized by trends toward the elimination or weakening of professional market shelters (for example, by requiring competitive bidding for professional services) and the standardization of professional work under the auspices of bureaucratic organizations. Freidson contends that, if these trends continue:

- Many tasks currently performed by professionals will be done by less qualified workers.
- Many professional positions will be transformed into positions for technologists or technicians.
- Expert knowledge will become increasingly commodified.
- Current professions will evolve into a two-tiered system consisting of a small core of elites who set professional standards and a larger population sub-professional practitioners who perform standardized, routine work.
- Employing organizations will continue to standardize professional work in order to reduce costs and better control their work forces.
- Within professional schools, curricula will have to respond ever-greater demands for practical training, aimed at preparing students to perform specific tasks required in the workplace.

The ultimate effect of these trends will be a long-term decline in the quality of professional work, due to reduced discretion, increased standardization, reduced job satisfaction among practitioners, and constraints on the development of new knowledge.

All of these trends can be seen, in varying degrees, in the civil engineering profession today. For this reason above all, ASCE's ongoing efforts to strengthen the profession are imperative.

Conclusions

The analysis outlined above yields the following four major conclusions:

- Freidson's model of ideal-typical professionalism is astonishingly applicable to civil engineering. Most, if not all, of the significant challenges associated with Policy 465 implementation are addressed and informed by the model. Many of the problems that the "Raise the Bar" initiative seeks to solve were well characterized by Freidson's model long before they were explicitly articulated by ASCE. For this reason, the model has great utility as an organizing framework for future efforts to advance the profession.

- In the context of theoretical ideal-typical professionalism, engineering is inherently weak. This weakness results from the nature of the discipline, the organizational context in which engineering work is usually performed, the supposed exactness of the engineering BOK, and an ideology that can only claim *efficiency* as a transcendent value. For a variety of reasons, however, civil engineering appears to be an exception to this rule. As a result of its association with public work, its strong emphasis on credentialing, and its unique organizational context, civil engineering exhibits considerably greater consistency with ideal-typical professionalism than most other engineering disciplines.
- In general terms, the implementation of Policy 465 has followed a course that is consistent with Freidson’s model. With one significant exception, major aspects of the initiative have tended to strengthen the profession by moving it toward greater consistency with the ideal-typical model.
- The ASCE “Raise the Bar” initiative falls short of Freidson’s ideal-typical model in its lack of emphasis on research as the stimulus for the long-term development, refinement, and expansion of the professional BOK.

Recommendations

Specific recommendations for the future direction of ASCE Policy Statement 465 implementation are provided below. It must be emphasized that these recommendations do not necessarily reflect the opinions of the authors; rather, they derive logically and objectively from the foregoing analysis. They therefore describe actions that will tend to bring the civil engineering profession toward greater consistency with the “strong” ideal-typical model of professionalism described by Freidson. The recommendations are as follows:

- The published civil engineering BOK should remain a dynamic entity; thus, ASCE must be willing to continually update and refine it.
- The civil engineering BOK’s enhanced emphases on theoretical subjects (math, natural science, engineering science), on masters-level technical specialization, on risk and uncertainty, and on the inclusion of humanities and social sciences are fully consistent with Freidson’s model and should be preserved.
- ASCE’s longstanding emphasis on the profession’s role in enhancing public safety and quality of life is appropriate from an ideological perspective. Efforts to strengthen this linkage in the public mind must be continued and enhanced.
- The BOK’s emphasis on sustainability represents an opportunity to greatly enhance the ideology of the civil engineering profession, by associating its work with a transcendent value that has broad appeal.
- ASCE’s emphasis on professional licensure is critical to the current and future strength of the profession and must be preserved. The society should discourage its members from working in organizations that are granted an “industrial exemption” to practice engineering without a professional license.
- ASCE should be prepared to proceed with its “Raise the Bar” initiative without the cooperation of other engineering societies if necessary. The vast differences between the engineering disciplines and, in particular, the tendency of the manufacturing-oriented

disciplines toward bureaucratic (organizational) control of their work will hinder long-term collaborative efforts to strengthen the engineering profession as a whole.

- On the other hand, it is critically important for ASCE to maintain strong collaborative relationships with the professional organizations representing civil engineering sub-disciplines (e.g., American Water Works Association, Institute of Transportation Engineers) and closely related engineering disciplines (e.g., American Academy of Environmental Engineers). Because these organizations are all extensively involved in public work, and because they are similarly committed to professional licensure, their goals are more likely to be aligned with those of the civil engineering profession as a whole.
- Future editions of the published civil engineering BOK should note the importance of university-based research in ensuring the vitality of the BOK.
- ASCE should continue to promote dialog with its technical institutes over the future of the profession, recognizing that differentiation and disagreement over policy positions are inherent in professional organizations.
- ASCE should continue to pursue the “Raise the Bar” initiative without reference to its effect on monetary compensation for engineering professionals. To preserve the ideology of professionalism, economic gain must be viewed as secondary to the intrinsic satisfaction of professional work.
- Given its power, coherence, and broad applicability, Freidson’s model of ideal-typical professionalism should be used to guide the future strategic direction of the civil engineering profession.

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