Introduction

The system of tenure in institutions of higher learning in the United States was conceived in 1915 by a small group of professors at Johns Hopkins University who formed the American Association of University Professors (AAUP). The principal organizer was Arthur Lovejoy who had left the Stanford University after Professor Edward Ross had been forced to resign for criticizing the policies of Mrs. Stanford. The founding members of the AAUP concluded that the adoption of tenure would heighten the security of the faculty and temper the arbitrariness of the administrators. In 1940, the AAUP and the Association of American Colleges (AAC) approved the classic document, *Statement of Principles on Academic Freedom and Tenure.* The AAUP struggled to implement the model of tenure and academic freedom because trustees and presidents did not favor faculty unionism. It was not until institutions of higher education faced an acute shortage of faculty in the sixties that the tenure system became relatively universal as a way to attract qualified professors.

Academic tenure functions as a guarantee of continuous employment until the faculty member dies, voluntarily retires, or is relieved of his or her duties because of: (i) adequate cause (demonstrated incompetence or dishonesty in teaching or research, to substantial neglect of duty, and to personal conduct which substantially impairs the individual’s fulfillment of his or her institutional responsibilities); or (ii) financial exigency (an imminent financial crisis which threatens the institution as a whole and which cannot be alleviated by less drastic means). An academic institution grants tenure after an extensive review by peers and administrators of the faculty member’s performance in the areas of scholarship, research, teaching, and service.

As soon as the model of tenure and academic freedom became in effect in most public and private universities and four-year public colleges, it started being questioned by people outside as well as inside universities. In the last decade, however, the battle over tenure has intensified. Legislatures have been introducing bills designed to abolish the tenure system in the United States. Many institutions of higher education in Colorado, Florida, Georgia, Hawaii, Kentucky, Maryland, New York, South Carolina,
Texas, Washington, and Wisconsin have proposed some form of post-tenure review to ensure greater accountability.

I explore the importance of tenure and academic freedom in engineering in the United States. I have elected to concentrate on engineering faculty because they claim to be “neutral” and are seldom engaged in controversial research and/or teaching for which academic freedom has been historically justified. Yet, engineering faculty are involved in genetic engineering, nanotechnology, nuclear engineering, and information technology whose social impacts have resulted in debate among policy makers and public.

Controversies Surrounding the Tenure System

The tenure system in the United States has been a source of controversy since its very inception; however, it has intensified in recent years due to budgetary constraints, the end of mandatory retirement, and an increase in the cost of higher education.

1. Arguments in Support of the Tenure System

The AAUP, an influential body representing the interest of faculty members, has justified tenure on the ground that it ensures (1) freedom of teaching and research and of extramural activities, and (2) a sufficient degree of economic security to make the profession attractive to men and women of ability. The AAUP believes that tenure provides the most reliable means of assuring faculty quality, educational excellence, and academic freedom. It holds that the freedom to carry out research and to criticize a university’s administration would inevitably be circumscribed without tenure.

Academic freedom is seen necessary to produce new knowledge for the benefit of society. The 1940 Statement states: “The common good depends upon the free search for truth and its free exposition”. Academic freedom is an intra-academic privilege sought exclusively to protect the independence of faculty from state legislators, governors, trustees, administrators, colleagues, students, alumni, and public. The best way to guarantee that faculty will pursue truth freely and objectively is if they have no fear of being penalized in case they break the tradition, try new approaches, or turn up unpopular results. Tenure gives faculty the independence to speak out about controversial matters and to challenge the administration on curriculum issues. The First Amendment also guarantees freedom of speech, but the Constitution does not guarantee that one can not be fired for expressing ones beliefs as part of the job. Academic freedom, however, does not mean the faculty can hold students to his or her belief and can act unprofessionally.

Proponents argue that prior to tenure, dissident professors were the victims, trustees and administrators were the culprits, the power of dismissal was the weapon, and the loss of employment was the wound. Many academics had been fired because of their views on such contentious issues as slavery, racism, civil rights, evolution, colonialism, Marxism, war policies, and opposition to university authorities. During the McCarthy era of the
fifties, even tenure did not protect professors suspected of harboring communist sympathies.\textsuperscript{24} Similarly, after 9/11 tenure could not protect the faculty holding political convictions.\textsuperscript{23, 35} Still, proponents believe that tenure is the best available mechanism that can protect academic freedom.

Proponents debunk critics of tenure by showing conceptual problems in the criticism and lack of evidence. Tenure is often criticized as entrenching a lazy but radical professoriate and supporting research over teaching. Proponents point out that teaching has been a basic component of faculty identity. Even at research universities, few academic departments can survive without students and teaching. According to them, the real question is how well academic organizations are training faculty to excel in teaching. They further point finger to the National Survey of Postsecondary Faculty conducted by the National Center on Education Statistics, which shows that tenured faculty generally publish more, serve on more committees, and teach more than their untenured colleagues. On average, tenured faculty work over 50 hours per week. Proponents also point out that research and good teaching are complementary to each other. According to them, if there is an imbalance in research and teaching, it is created by academic institutions to compete for external funding. On the question of indoctrinating students with radical ideas, proponents are clear that it is the nature of academic life to favor students to move beyond complacency in their thinking. Finally, proponents believe that tenure does not protect incompetence since it allows for dismissal through proper procedures.

2. Arguments against the Tenure System

The most frequent attack against tenure is that it entrenches a radical professoriate.\textsuperscript{3, 15, 29} Critics argue that tenure provides a platform for the radical faculty to indoctrinate students with leftwing ideas. According to them, the faculty teach students to deviate from their cultural, social and political values and corrupt the young students with the ideology of skepticism and radicalism.

Less extreme argument suggests that untenured faculty work harder before than after getting tenure. Once tenured, they have little incentive to teach and be productive in their fields. They spend as little time as possible in their offices or with students. They do not take the sufficient interest in teaching. They sacrifice teaching over research.\textsuperscript{14, 30} Tenure is based on the assumption that a professor who has demonstrated his or her ability at the age of 30 to 35 years will continue to maintain it for the next 35 years or so, which may not be the case.\textsuperscript{18}

On the question of freedom to speak, critics argue that academics are not the only ones to espouse unpopular views and challenge orthodoxy. Writers, journalists, filmmakers, and whistleblowers also speak out on controversial subjects and challenge authority even though they do not enjoy the protection provided by tenure.\textsuperscript{14, 28, 30} With the end of the cold war and decline of communism, many people contend that the judicial courts ensure academic freedom under the freedom of speech rights and tenure under property rights.
It has also been suggested that a major threat to outspoken professors can be found within academia itself. Members of a tenure committee may not recommend tenure to untenured professors on unjustifiable grounds such as ideology, race, or gender. For instance, the Harvard sociologist, Skocpol\textsuperscript{25} was denied tenure. She charged gender bias, noting there were no female tenured professors in a department of eleven and a tiny percentage of tenured women faculty in Harvard generally (3.4% compared with about 10% nationwide). Every year, the \textit{Chronicle of Higher Education} publishes several stories showing the denial of tenure to untenured faculty on questionable grounds.

Tenure is also blamed for the devaluation of teaching. Many believe that there is imbalance between research and teaching in favor of research. Critics observe that receiving an award for good teaching does not result in tenure. For example, three out of four recipients of teaching awards at Harvard were denied tenure. Ferruolo at Stanford, and Tifney and Crosby at Yale were denied tenure after winning teaching awards.\textsuperscript{18}

The increasing use of contingent academic labor is also blamed on tenure. Data provided by the U.S. Department of Education indicate that 33\% of the faculty were part time in 1987. The figure rose to 43\% in 1998, and some estimates put the current figure at 46\%.\textsuperscript{6} With adjunct faculty, it is exceedingly difficult to maintain high academic standards when they have little opportunity to participate in departmental activities yet teach over a third of college classes. Critics argue that with the abolition of mandatory retirement in 1994, tenured faculty do not need to retire, and they cannot be fired. So, the university has few new openings and tenured positions. Further, reduced revenue from the federal and state governments has led to shrinking university budgets. It leaves the university with no other choice than to rely on short-term contract employment.

Tenure and Freedom in Engineering

Although a study of the impact of the tenure system in all branches of education is of paramount importance, I focus on engineering because it makes an interesting case study combining constantly changing engineering technology with the value of academic freedom which rose almost 100 years ago.\textsuperscript{34} Such a case study is likely to illuminate some of the underlying roles for tenure that go beyond academic freedom.

Academic freedom is likely to be utilized differently in engineering than in humanities and social sciences. Dewey\textsuperscript{9} argued long ago that scholars in humanities and social sciences needed academic “freedom of investigation” because they addressed “the problems of life”, and thus faced “deep-rooted prejudice and intense emotional reaction”. Historically, advancement of knowledge in humanities and social sciences has depended on academic freedom.\textsuperscript{21} Engineering, on the other hand, is concerned with what Dewey\textsuperscript{9} would call “problems of technical theory”. The Accreditation Board for Engineering and Technology (ABET) defines engineering as: “The profession in which knowledge of the mathematical and natural sciences, gained by study, experience, and practice, is applied with judgment to develop ways to use, economically, the materials and forces of nature for the benefit of mankind”. This definition shows that the subject matters of engineering are technical objects and not people. Engineering is not involved with social, ethical,
economic, and political aspects of life and thus do not need to critique accepted norms and values for which academic freedom has been justified.

The same definition also shows non-technical aspect of engineering. Engineers use their knowledge and skill to help mankind. They solve problems for people, communities, and society. In this respect, engineering is somewhat different from basic sciences and mathematics. Engineers use knowledge and skills gained from basic sciences, mathematics, and engineering sciences to convert resources into a socially needed products such as the dams, canals, roads, bridges, buildings, computers, weapons, electronics, engines, power plants, transport devices, spark plug, and so forth. Designing such products also involve some understanding of the society, work life, safety, and environment. Thus, the technical and non-technical content of engineering means academic tenure in that field cannot be viewed as obsolete as one may argue for basic sciences and mathematics.

Notwithstanding the arguments advanced above, engineering faculty cherish the ideology of objectivity and supposedly practice detachment from social issues. They are supposed to remain value neutral on social issues in the best tradition of scientific inquiry. The objective engineering faculty are considered intellectually impartial and rewarded with higher status. Generally, questions on the responsibility of engineers to the society had been raised by social scientists, a lot more than by engineers. Popular engineering publications such as Technology Review and Prism tend to present engineers’ view that technology is value neutral. Since engineering faculty are assumed to teach and research with “neutrality”, tenure does not appear imperative.

At the same time engineering faculty deal with technologies that have profoundly transformed society. Since World War II, technology-based progress has been rather pervasive. Even the basic means of life such as food, clothing, shelter, health, and entertainment have been technified. While technology has transformed the society for better, not all technological developments have only positive outcomes; the improvements which technology has brought have been achieved with some cost such as an environmental crisis, depletion of nonrenewable resources, lack of responsibility in manipulating the environment, moral difficulty caused with the development in genetic engineering, serious damage resulting from the failure of technological systems, and so forth. Because of such impacts of technological development, academic tenure seems a way to protect individual engineering faculty member as well as society.

Further, engineering faculty face many constraints on their disciplinary autonomy from industry. Such autonomy provides support for the faculty to select problems as well as the means of solving the problems within their specialties. It lets peers police the conduct of fellow faculty members with respect to their expertise and the knowledge produced. This self-regulation excludes outside influence. However, since the early eighties industry and government agencies are supporting academic research that is geared to help industry to compete successfully in the global market. Research funds from industry are increasingly playing a major role in the themes of engineering research. When the market dictates research, these external instead of internal considerations influence
faculty’s autonomy. In contrast, many more fields in humanities and social sciences remain independent from market forces than for engineering. With the high level of research activities with industry, tenure is likely to encourage engineering faculty to engage in disinterested research and openly present results to peers and a general audience.

Women and underrepresented minorities experience more institutionalized sexism and ethnocentrism in engineering than in other fields such as humanities, social sciences, biology, law, and business. The maleness and whiteness of the engineering faculty are conspicuous. The content of engineering education and practice conveys and reinforces masculine values such as it is for strong men who wish to have a close encounter with heavy, oily machinery.\(^5\) Women and minorities face many cultural barriers to acceptance in an engineering milieu.\(^4,5,12\). They often take on extracurricular responsibilities to encourage other women and minorities to influence department policies. As social activists, women and minorities are likely to fare better with academic freedom, yet face hardship in tenure decisions.

The question of importance is whether tenure has become obsolete in guaranteeing academic freedom in engineering. The answer is difficult. I believe there is a need to study the importance of tenure in ensuring the highest standard of teaching, research and social accountability in engineering institutions. In particular, one has to study the following issues:

- **Academic Freedom:** Are there structural hindrances to teaching and research in engineering and in what way do they relate to tenure? Is the freedom of engineering faculty constrained by funding agencies including the industry? Is the judgment of engineering faculty influenced by administration? Do engineering faculty strive to express their views on controversial issues?

- **The Seven-year Rule for Tenure:** Is the seven-year rule for tenure in engineering faculty appropriate, and if not, what should it be? Do junior faculty exercise unusual care during probationary years and compete for favor from senior faculty who have a say in tenure?

- **Performance before and after Tenure:** Does obtaining tenure adversely affect the productivity of engineering faculty as judged by research publication, teaching quality, and interaction with students?

- **Teaching versus Research:** Does tenure relegate teaching to a secondary position over research activities, which are the basis of funding in engineering?

- **Women and Minorities:** Does the tenure system restrict adequate representation of women and minorities in the engineering faculty? How does the tenure system influence their attitude towards institutionalized sexism and ethnocentrism?

- **Temporary Positions:** Does the tenure system encourage substitution of regular staff with visiting, part-time or adjunct professors in engineering?

- **Post-Tenure Review:** How does post-tenure review function and how effective is it? Is post-tenure review a desirable approach to deal with perceived relative inactivity of tenured faculty?
Other incentives: What incentives other than job security does the tenure system offer to engineering faculty in teaching, research, and service?

References


Biography

Roli Varma is an associate professor of public administration at the University of New Mexico. She also teaches a Technology in Society course for the School of Engineering. Her research interests and publications include restructuring of corporate R&D laboratories, women and minorities in information technology, Asian scientists and engineers in the United States, and engineering ethics. She can be reached at varma@mgt.unm.edu