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**ETHICS AND LEADERSHIP:  
Reflections From A Public Research University\***

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**ABSTRACT**

Issues of ethics and leadership are important, growing and intense in universities. Five examples are discussed, drawn from the personal experience of the author. These involve the selection of research, the collection and use of ethically sensitive materials, major relationships with industry and donors, access and admissions, and the content of education itself. Analyses of these cases are couched in terms of some of the major trends affecting public research universities, with one conclusion being that the most challenging situations are those where multiple ethical standards are pertinent, and conflict with one another.

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**Introduction**

Ethics and ethical leadership are subjects of great importance and concern in today's higher education landscape.

The subject of ethics and leadership is also far-ranging and complex, even when restricted to the university world and, within it, public research universities. To deal with the subject in the abstract would probably leave us all flat. Therefore I am going to make some assertions that will provide the basis for narrowing things down and making them more tangible.

- People are able to discern between right and wrong when there is a single ethical standard. That's not so hard to do.
- The most difficult situations are those where multiple ethical standards are at play, and they cannot all be satisfied by whatever action is chosen.

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- For public research universities there are a number of major trends – or paradigm shifts – that are presenting us with multiple ethical standards.
- To understand these, it is necessary to deal with specific instances or cases.

To begin, what follows is an overview of some salient features and trends in American public higher education, particularly as they pertain to the public research universities,. I shall then examine these issues in the contexts of several concrete examples, all of which are ones with which I have first-hand experience at the University of California. Those examples are:

- Selection of research,
- Collection and use of ethically sensitive materials
- Major relationships with industry and donors
- Access and admissions
- Design of the content of education itself

Having done this, I will then take up the question of what mechanisms and forces are in place to encourage and assure that leaders of universities follow well chosen, ethical paths.

### **Trends for Public Research Universities**

The American system of higher education has been the envy of the world. Public universities have been the backbone of the highly regarded U.S. system of higher education, serving about 75% of those enrolled in higher education. Public research universities have had many roles in providing innovations for the benefit of the economy and society. Yet there are several growing concerns and trends.

- There is a growing view that higher education is more of a private, than public, good. Put another way, the benefit is coming to be seen as more to the individual in the form of future earning power than to society at large. The original rationale behind the Morrill Act of 1862 and public higher education in the U. S. was the benefit to society at large. The same rationale exists for much of the rest of the world. Consequently, this is a substantial and significant change.
- The view that higher education is more of a private good has resulted in the proportions of state budgets going to public higher education becoming less and less. This has typically not been a matter of devaluing public higher education, *per se*, but instead general pressures on state budgets and priorities or mandates for other functions, such as prisons and health care<sup>1</sup>.
- Consequently the proportion of the budgets of public research universities coming from the state has continually decreased in recent decades.
- Public universities have raised tuition and fees to make up for some of the loss of state support. This has resulted in rising costs for individuals. Although substantial portions of tuition increases have been devoted to financial aid and federal aid for those with the lowest incomes has remained strong, there is a

public perception that costs of higher education for those of modest means are greater than they actually are.

- An unfortunate result has been to hamper access for the less affluent to higher education. Yet public higher education has been traditionally the main route for upward mobility of capable people in society.
- The rise in tuition and fees has led to increased concerns in government and among the public that universities lack accountability and are unable to control costs. Witness the recent Spellings Commission report<sup>2</sup>.
- These concerns and growing needs for safety, environmental control, controls of conflicts of interest and commitment, and the like have continually increased government regulation relating to universities, increasing costs and restricting freedoms of action.
- Along with fees and federal government research support, other growing sources of funds for universities have been private gifts and support from private industry. For both, concerns have been expressed about their effects upon the values and priorities of the university.
- There have been a number of high-profile, high-level corporate malfeasances in recent years, with some examples being Enron, MCI WorldCom and Tyco. These events have led to a greater distrust of large institutions in general. Universities have not been exempt from this mistrust.
- The media, strapped financially because of changes in reading and viewing habits, have become even more aggressive in seeking instances of malfeasance in the leadership of institutions. Public universities are particularly vulnerable because of public records laws.
- Spurred by the media interest, public boards of trustees have become more suspicious of improper or hidden activities or agendas of university administrators. This has led in some cases to boards setting up independent analytical capacity and/or direct reporting lines of vice presidents for compliance, audit and/or finance to the board.
- All these factors combine with an inherent difference between private and public universities at the board of trustees level. Whereas trustees of private institutions are selected from a pool of those having very close ties and allegiances to the university, trustees of public universities are usually selected by a political process and often have little or no existing allegiance to the university. They can as well have private, political and regional agendas.

These trends lead to complex and conflicting pressures and incentives for leaders of public universities. They also lead to a number of interesting questions:

- Whom should the public university serve? Are the needs and concerns of those constituencies sufficiently taken into account, or is the university serving other masters? What happens when the needs of different constituencies conflict?

- To what extent are actions by leaders of public universities governed by concerns for avoiding negative stories in the media and/or negative reactions by state politicians, as opposed to determination of what is best for the institution? Do we place public opinion ahead of the needs of our students and faculty?
- Who should have access to an education in a public university that has limited capacity?
- What is the appropriate division of leadership responsibilities between boards and presidents of public universities?
- What mechanisms and forces are in place to encourage leaders of universities to follow well chosen, ethical paths?

I now proceed to the specific examples.

### **Selection of Research**

Traditionally, individual faculty members have been left to select and define their own research. This approach is guided by two rationales, one practical and the other idealistic. Practically, it is only the faculty member, thoroughly versed in the field, who has enough insight and understanding of the area of research to determine what is the important next question to be addressed, along with how that can best be done.

The idealistic rationale is academic freedom. This well established set of principles indicates that there should be no political or administrative interference with the faculty member's right to select, define and carry out research and instruction.

All well and good, but what happens if and when the field of research is something that presents major ethical questions and/or which a large fraction of society finds to be detestable? An early example case was the field called *eugenics*, which considered interventions that would "improve" the human gene pool. A component of this effort had to do with seeking to identify and understand differences in mental and physical attributes and capabilities among ethnic groups and races. This field was active around the 1920s, attracting such prominent figures as Charles Lindbergh, but for obvious ethical reasons fell into considerable disfavor after World War II. We had a faculty member on the Berkeley campus, some of whose research was on the differences among the races in averaged personality traits, including intelligence. In the 1970s, he reached conclusions that there were hereditary reasons for differences in IQ scores between Caucasian and African-American students. When he originally published these conclusions and gained notoriety, there were large student protests and legislative pressures to prevent or negate this line of his research. But this was deemed to be a matter of academic freedom and there was no intervention. He was able to continue his research through support from a private foundation with interests in the area.

Modern-day relatives of that controversy concern research on stem cells and health effects of tobacco. Research on stem cells, attacked on moral grounds, has become a matter of politics. An effective ban on stem cell research at the federal level has been

followed by state initiatives, most notably California's ballot initiative that designated \$295 million per year over ten years, financed through bonds, for stem cell research. This is a very clear example of an ethical issue being decided through voter referenda as well as legislative, gubernatorial and presidential actions. It has both promoted and considerably complicated research in the area. Free inquiry and continuity of funding are hampered when there is such a close connection to the political scene.

Research on health effects of tobacco has become a different sort of matter. Here the issue is whether or not financial support from tobacco companies for such research should be accepted. The reason for this concern is widespread feeling that the tobacco companies will follow an agenda of distorting results and/or the research itself, and that researchers may have to be less than objective to obtain such funding. These concerns have been fueled substantially by the publicity that surrounded the publication of a book by a University of California, San Francisco professor and his colleagues<sup>3</sup>. The professor received, from an anonymous source, a box containing several thousand pages of confidential internal documents from a major tobacco company. These documents, and the resultant book, revealed that the public statements of this and other companies on the subject of the addictive effects of nicotine were totally at variance with what was, in fact, known within the companies on the subject of addiction. One could, of course, question as well the ethics of the leak from within the company.

California has for years had very strong regulations banning smoking in restaurants, offices and other public places, and the state has even funded a forceful anti-smoking public-service advertising campaign. It is no surprise therefore that there has been considerable pressure from within the University of California and from the legislature and other sources for UC to refuse research support from tobacco companies. Several medical schools and departments elsewhere have adopted policies internally agreeing to do just that. Our university has considered this matter at length through the Academic Senate, the faculty organization that is the appropriate venue, with the result that its governing body, the Academic Council, has recommended that the principles of academic freedom outweigh the concern about motives and agendas of tobacco companies. However, several members of the Board of Regents believed it important to make this move, and the Regents have adopted a policy whereby proposals to tobacco companies should be reviewed internally to assess the quality and appropriateness of the research before they may be submitted. Thus an intermediate position was adopted by the Board.

Similar issues pertain in the recurring issue of whether or not certain holdings should be divested from the endowment or retirement funds of universities. Within our university, the issue two decades ago was divestment from firms doing business in South Africa. Divestment was adopted by the Regents against the recommendation of the president following the decision by the governor to support it. More recently the issue has been divestment from tobacco companies, which the Regents have been able to side-step following a declaration from the Treasurer that there were no such holdings and no financial reason to make such investments.

### **Collection and Use of Ethically Sensitive Materials**

Put yourself in the following situation. Your telephone rings one day late last summer, and it is the president asking you to take over the management of a major research

museum on the campus. This museum holds the second largest collection of Native American artifacts after the Smithsonian. Included among these holdings are approximately 12,000 skeletal remains, with the exact number depending upon how one counts partial skeletons. The holdings of these remains are of course quite controversial within and outside the native community, with a substantial contingent advocating immediate return, such as to whatever tribe is currently located nearest the point from which the remains were collected. However, this collection of remains has also been an enabler of research and teaching on osteology and bio-archaeology, fields which are valuable for advances in medicine, nutrition, ethnography, anthropology and the origins and evolution of mankind. The museum is teeming with controversies associated with these and other issues. You are asked to dive in and take over for a period of stabilization, evaluation and course-setting for the future, all of this involving deep ethical issues.

This is exactly what happened to me a few months ago. With little advance warning, I became Interim Director of the Phoebe A. Hearst Museum of Anthropology at Berkeley. The museum has a collection of 3.8 million diverse items, ranging back to the acquisitions of Phoebe Apperson Hearst, who was a Regent of the University of California and the mother of the noted publisher William Randolph Hearst<sup>4</sup>. The collection is not only Native American, but also Greco-Roman, Egyptian, Peruvian, African, Mediterranean, and Oceania. This large and diverse collection is mostly in storage, with only minimal display space. The museum is much more for research than for public display. The controversies are a sub-set of long-term issues which arose in the controversies over Kennewick man and in numerous situations involving the interactions of archaeologists with native peoples<sup>5</sup>.

Some of the major ethical issues that arise surround the following questions:

1. How much of the collection should be returned to its origins, or considered for return? How should determinations regarding returns be made?
2. Were the holdings of the museum all acquired by methods that would today be considered to be honest and appropriate?
3. Do issues of native values and religion conflict with issues of what is most useful for the advancement of knowledge, and in what ways?
4. Is utility for research sufficient justification for even the relatively non-controversial portions of the collection, or is public access as compelling or more compelling, especially for a public university?

In the case of the Hearst Museum collection, items were obtained from excavation of burial sites, through purchase, through donation, and in the case of many of the remains, from the California State Department of Transportation, which uncovered remains over the years during the course of highway construction. This doesn't differ much from the situations for other, similar museums. Battlefields of the 19<sup>th</sup> century have as well been a source for some other museums.

Here again, government has entered to legislate what should be done. The Native American Graves Protection and Repatriation Act of 1990<sup>6</sup>, known as NAGPRA, defines methodology for determining what is culturally affiliated with a tribe and what is not. Culturally affiliated items must be returned upon request, through a multi-step procedure of considerations and approvals. Policies and procedures for culturally unaffiliated items, particularly human remains, are much more complex, usually not resulting in

repatriation. Only federally recognized Indian tribes qualify for cultural affiliation (as well as for casinos!). In California, there are 108 federally recognized tribes, but still the majority of native population falls into bands and groups that are not federally recognized. The legal situation is, to say the least, complex.

The simple answer is that one is not left with ethical choice alone; regulation controls what is done.

Another issue is tribal accessibility to holdings that remain with museums. In many cases, tribes prefer that museums retain tribal artifacts, since the museum may have better capability of caring for them. Such arrangements may call for particular storage conditions and/or means and locations for reverent access.

Similar issues, but without federal or international regulation yet, apply for materials that were obtained in the past by archaeologists from the developed world working in ancient lands. Thus we have the continuing controversy surrounding the Elgin marbles of the British Museum. In another noted case, Yale University has recently reached an agreement with Peru to return ownership of artifacts acquired by Hiram Bingham upon the excavation of Machu Picchu<sup>7</sup>.

### **Major Relationships with Industry and Private Individuals**

Growing funding from private donors and from private industry has stimulated concerns that the academic purposes and decisions of universities may become distorted by strings attached to gifts and grants, as well as efforts by universities to please donors. These are legitimate concerns.

For the most part, the concerns for major relationships with industry can be grouped into categories, as follows.

- Companies may unduly influence the research agenda, limiting free inquiry.
- A conflict of interest occurs when a faculty member has industrial ties and related university research.
- Companies or faculty with ulterior motives may hold back damaging research results. This concern often occurs in connection with clinical trials.
- Public access to knowledge may be restricted. Knowledge that is inherently a public good may go into private hands because of exclusive licensing, publication delay, or not being published at all.
- Cross-fertilization of research may be impeded if universities accept confidentiality arrangements with corporations.
- A conflict of interest may arise if a faculty member determines whether an invention in which s/he has participated belongs to the university, a private entity, or both.
- Reliance upon private funding such as licensing revenue or corporate research support may distort academic purposes and the overall academic agenda.
- Entrepreneurial faculty may be less engaged in classroom education.
- The humanities and social sciences may decline in attention and importance, because government and industrial funding is primarily directed towards the



sciences and engineering. Put another way, the emphasis of the university will go to where the money is.

In the other direction, it must be recognized that academic research in a number of fields would become sterile if not cross-fertilized with industry. As well, the synergy gained by close linkages between universities and industry moves society and the economy forward much more efficiently than would be the case if interactions did not occur frequently. Interactions between universities, industry and the government should and must occur. The need is to manage them effectively so as to reap as many of the gains as is consistent with minimizing the concerns.

Universities have instituted, and continue to institute, numerous policies to deal with these concerns, in some cases working within federal or state guidelines. In addition to having policies, universities must have means of monitoring and enforcing them as well. *Inter alia*, policies cover such subjects as conflict of commitment, conflict of interest and disclosure of financial interests, consulting and other activities outside the university, disclosure of inventions, research misconduct, technology licensing, university-industry relations, use of university research facilities, publication policy, patent and copyright policies, research integrity, and reporting of improper activities, also known as whistleblower policies.

Similar concerns apply for pressures that may come from major private donors. Indeed, there have been several instances in recent years where donors have withdrawn gifts or where universities have refused gifts because of lack of agreement over whether the terms are appropriate to the academic nature and values of the institution. Since the desires of donors vary widely and can be both highly varied and idiosyncratic, it is difficult to cover all eventualities through policies. Rather, it is incumbent upon university leaders to have a general sense of academic values and apply them prudently.

Of course federal grants can also be viewed as perturbing academics. Nobody thinks or talks much about that potential, probably since federal grants have been around so long and are considered part of the fabric of research universities. Yet research goes to where the money is, and certainly the structure of federal research support and federal initiatives have had their effects on faculty choices of research areas. This holds for state-funded research initiatives as well.

### **Access and Undergraduate Admissions**

It may seem a stretch to think of university admission as an issue of ethics, but in many ways it is for selective universities. Admissions policy relates directly to the issue of public vs. private benefit for higher education.

California has had for years a rather unique approach to determining eligibility for admission to its two public universities – the ten-campus University of California and the 23-campus California State University. By the California Master Plan of 1960, the upper 12.5% of public high school graduates are eligible for the University of California, and the upper 33% of public high school graduates are eligible for the California State University. The criteria for what constitutes the upper 12.5% and the upper 33% are defined by the universities themselves. The measure has always been a combination of grades of college-going classes and standardized test scores. By a subsequent revision

of the Master Plan, eligibility means guaranteed admission, although not necessarily to the campus or even the major of choice.

But it's not that simple. The desires of eligible students for admission do not distribute across the ten campuses in accord with available capacities. Many more want certain campuses, with UCLA and Berkeley being the most highly impacted. Those campuses can receive applications from seven times as many eligible students than they have capacity for. So there is the matter of deciding which of those students to admit to the campus. For that there need to be admissions criteria.

Until 1995 these admissions criteria included a special boost for under-represented eligible applicants – African-Americans, Latinos, American Indians, and women in fields such as engineering. In July of 1995 the Regents of the University of California adopted two resolutions banning any use of race, gender or various other attributes in decisions regarding admissions and employment. This was followed by a statewide ballot proposition with essentially the same proscription. Thus, even though the Regents later rescinded their two resolutions, the law held firm.

Twenty days after the passage of the Regents' resolutions, I became Provost and Senior Vice President for Academic Affairs for the University of California system. In a very public venue, we started to address the matter of how we should change admissions and eligibility policies for the UC system. This led, over time, to a fundamental consideration of what we should try to achieve through admissions policies and criteria -- the ethics of admissions if you will.

There was a public, or societal, good associated with admissions policies aiding the disadvantaged, since higher education is a prime avenue for upward mobility and since it will not serve America or California well to have a permanent under class. Yet a view of higher education as an individual, or private, benefit does not logically have a racial or societal component.

There are a number of large inequalities in public secondary education in California, when viewed across the entire state. High schools vary enormously in quality, including such measures as the number of teachers who are credentialed, the number of advanced placement and other elective courses available, and college-going rates. Suburban schools tend to rate high by these measures, and inner-city and highly rural schools low. Not surprisingly, underrepresented minorities are highly concentrated into poorly performing schools. The nature of the school affects the strength of an application for admission in several ways, such as the number of Advanced Placement courses available, and scores on standardized tests. Thus a student, no matter what her or his ability, would have an immediate handicap by going to a lower-quality public school.

Led by then-President Richard Atkinson, we became interested in the concept of utilizing as a criterion accomplishments given the opportunities available, the "opportunity to learn", and we sought ways of incorporating these into both eligibility and admissions criteria. With regard to eligibility for the university, we added those in the upper 4% per high school, along with those eligible by statewide criteria based upon grades and test scores. Those in the top 4% per high school still have to have completed the college-going curriculum in order to be eligible. A letter from the president of UC was sent to all students in the top 4% per school, pointing out their potential eligibility and encouraging

them to apply. The very striking results of this change were that applications increased substantially from schools that had historically been low feeders to UC, and nearly all of those students eligible by being in the top 4% per high school also became eligible by the pre-existing, statewide criteria. Put another way, all these students needed was the encouragement from the president to become eligible and apply in the normal way.

For selection among eligible students for admission to the more impacted campuses, we instituted a system of comprehensive review, whereby campuses were chartered to make use of any or all of the fourteen criteria listed in Table 1, where the criteria higher on the list were given greater weights. This array of criteria brought in measures of opportunity to learn and accomplishments in a variety of circumstances. They correspond closely to the criteria, in addition to race, that have been used for years by private colleges and university. The difference is that for the public, selective institution they are publicly stated and scrutinized. And that includes scrutiny by both those strongly against any consideration of race and those who believe that special opportunities should be given to the disadvantaged.

We also did regressions to determine factors contributing to success in college. Striking results were that SAT scores added very little to the predictability afforded by high-school GPA, and that the SAT subject-matter achievement tests had significantly more predictive value than the SAT itself. This led to President Atkinson's quest for changes to the SAT<sup>8</sup>, in the form of adding writing and more math, along with the removal of the classic word analogies. These changes were subsequently adopted by the Educational Testing Service. Had they not been, the University of California would probably have dropped the requirement of the SAT.

### **The Content of Education Itself**

Finally, I believe that the determination of the content of higher education is becoming an ethical issue that is becoming more and more complicated by multiple standards or objectives. It relates to the questions distinguishing between private and public benefit.

Let me take engineering education as an example. Historically, the content of engineering education has been guided by the desire to create a skill set that is broadly useful, thereby leading to employment opportunities and a betterment of industry and the public sector – the economy and society. But such an education is not necessarily best for the development of the individual as a whole person or for creating the most flexibility and upward mobility for a person's career. In American education, the liberal arts and so-called general education have traditionally been the methods for creating the whole person, flexibility and upward mobility. But the liberal arts and general education are notably absent from most engineering curricula.

Now with the cost of education becoming such that it is as much or more a private good than a public good, it is important to pay commensurate attention to the needs of the individual for personal development and maximizing career opportunities. In my view, this calls for a much greater liberal arts base for the engineer. In a paper on this subject elsewhere<sup>9</sup>, I have urged consideration of a liberal-arts baccalaureate for engineers modeled upon pre-medical education, followed by the master's degree as the professional degree.

## **Leaders and Ethics**

What is there that assures that top leaders of universities have high regard for ethics, and what is there that can cause problems along those lines?

First of all, leaders of universities are generally drawn from within the academic community and typically have been department chairs, deans and/or provosts beforehand. Thus there has been ample evidence of their performance. Faculty opinion of candidates, ethical and otherwise, is well developed. before they are considered for a presidency.

Operating in the other direction is the fact that many presidential searches move very fast towards the end, and sometimes the desire for confidentiality means that inquiries are not as thorough as they might be.

Once a president or provost is in office there are numerous factors that encourage ethical behavior. In public universities there is constant and intense public scrutiny, driven by media interest and public records laws. Regents and trustees are a collection of individuals, and a number of those individuals provide scrutiny, each in their own way. There is also plenty of internal scrutiny as well, and that scrutiny can feed regents, media and government.

These factors that generate and promote ethical behavior on the part of university leaders can also generate conservatism. The surest way to avoid ethical problems is to stay far away from them.

## **Conclusion**

Many of the most difficult issues in the leadership of the academy result from ethical conflict among different standards and ideals. I have outlined five such examples. In the case of the selection of research, academic freedom and thorough development of knowledge argue for no limitations, while moral and ethical concerns about certain subject areas can lead to pressures for limitation. In the museum case, implied rights and ownership by descendents and tribes compete with the ideals of public access and building scientific knowledge. For major research agreements with government, industry and private individuals, betterment of society and the economy through research can conflict with perturbation of the academic mission. The answer is to manage those conflicts. In the case of admissions policy for a selective public university, the conflicts are between public and private benefit, and between access for those who have accomplished the most, as opposed to those for whom higher education at the institution may make the largest difference to the individual and to society. Finally, the needs for the content of education itself are becoming more and more influenced by the question of whether it should primarily serve the individual or institutions and society.

No one has ever said that these issues are easy. They are not.

**TABLE 1***Admissible Criteria for Selection among Eligible Applicants for Admission to Campuses*

1. GPA in college-going courses
2. SAT and/or ACT scores
3. Performance in college-going courses beyond the minimum requirements
4. Number of, and performance in, Advanced Placement and Honors courses
5. Being in the top 4% of one's high school
6. Quality of the senior-year program, as measured by the type and number of courses
7. Performance relative to educational opportunities available in the school
8. Outstanding performance in one or more subject areas
9. Outstanding work in one or more special projects in any academic field
10. Recent, marked improvement in GPA and/or quality of courses
11. Special talents, special skills, experiences that demonstrate potential for leadership and/or promise for contributing to the intellectual vitality of the camps
12. Special projects in context of school curriculum or events
13. Academic accomplishments in light of life experiences and special circumstances
14. Locations of secondary schools and residence.

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## NOTES

<sup>1</sup> C. J. King, J. A. Douglass & I. Feller, eds., "The Crisis of the Publics: An International Comparative Discussion on Higher Education Reforms and Possible Implications for U. S. Public Research Universities", Center for Studies in Higher Education, University of California, Berkeley, November 2007.

<http://cshe.berkeley.edu/publications/docs/CrisisPublicsReport.Nov2007.pdf>

<sup>2</sup> The Secretary of Education's Commission on the Future of Higher Education, "A Test of Leadership: Charting the Future of U. S. Higher Education", U. S. Department of Education, September 2006.

<sup>3</sup> S. A. Glantz, J. Slade, L. A. Bero, P. Hanauer & D. E. Barnes, eds., *The Cigarette Papers*, University of California Press, 1998.

<sup>4</sup> D. Nasaw, *The Chief: The Life of William Randolph Hearst*, Houghton-Mifflin, Boston, 2000.

<sup>5</sup> D. H. Thomas, *Skull Wars*, Basic Books, New York, 2000.

<sup>6</sup> <http://www.nps.gov/history/nagpra/MANDATES/25USC3001etseq.htm>

<sup>7</sup> <http://www.yale.edu/opa/newsr/07-09-14-01.all.html>

<sup>8</sup> <http://www.ucop.edu/pres/comments/satspch.html>

<sup>9</sup> C. J. King, "Let Engineers Go to College", *Issues in Science and Technology*, 22, No. 4, 25-28 (2006). [http://www.issues.org/22.4/p\\_king.html](http://www.issues.org/22.4/p_king.html).