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*Universities and Scholarship in the Modern Democracy*

by

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ABSTRACT

A central feature of the modern democracy is public debate on issues of government; this debate is most effective when it assumes a form of rational inquiry resembling the practices of the natural and historical sciences. History suggests, however, that a deep impetus in human nature is to suppress such debate in order to avoid offense. I argue that universities, which should be the standard-bearers of rational inquiry, are succumbing to this instinct. The erosion of rational inquiry in universities is caused by the growing tolerance of shoddy scholarship and pseudoscience in certain disciplines, together with widespread uncritical acceptance of cultural constructivist accounts of the nature of knowledge. This has contributed to the replacement of evaluation of evidence by forms of ad-hominem argument, to the growing acceptability of advocacy in the classroom, to the politicization of scholarship, and to forms of intellectual tribalism. I illustrate the problem by presenting examples of shoddy scholarship, and by describing recent trends in elementary mathematics and science education. I conclude by suggesting approaches to reform within universities.

## ***Introduction***

It has been said that the modern representative or parliamentary democracy is actually a dictatorship which is constrained by time and by the knowledge that, if laws and policies introduced by the government of the day do not adequately reflect the concerns of the governed, the rulers will be turned out of office. It relies, not upon aristocrats or other elites to formulate government laws and policies, but upon widespread participation of all citizens in the decision-making process. Thus, as philosopher Paul Kurtz (1996) states, democracy “is rooted in a method of inquiry,” and, to be most effective, “[T]his means that we need to cultivate in the ordinary person the arts of intelligence, an appreciation of critical thinking, and some rationality.” I maintain that this implies that the public debate should resemble as much as possible the methods of the natural and historical sciences in that it should rely on rational, informed, argument: logic applied to the evaluation of evidence.

But the historical record clearly shows that such a mode of debate is difficult to achieve. The reasons seem to be rooted in universal human propensities for irrationalism and for taking offense on religious, political or other grounds. My thesis is that universities, which should be both scholarly resources for and standard-bearers of informed debate, are contributing to a resurgence of irrationalism, and that this development bodes ill for the future of Western democracies. I cannot claim this thesis to be original, nevertheless I hope that my perspectives on it as an engineering scientist and scholar will contribute to changing the tide in universities.

The human propensity for irrationalism is well-known; astronomer Carl Sagan (1995) gives a readable and informative account of its many current manifestations in the USA. Also, the idea that informed rational debate is essential to the health of our democracies is hardly new. One of the most articulate recent proponents of this idea is the US journalist Jonathan Rauch; motivated by the obvious successes of the natural sciences, and seeing certain parallels with the intellectual methods of these disciplines, he uses the term *liberal science* for such a mode of inquiry. In this context, his classification of the modes of thought now operating in some form in most Western democracies is particularly pertinent; these are:

- *The Fundamentalist Principle*: Those who know the truth should decide who is right.
- *The Simple Egalitarian Principle*: All sincere persons' beliefs have equal claims to respect.
- *The Radical Egalitarian Principle*: Like the simple egalitarian principle, but the beliefs of persons in historically oppressed classes or groups get special respect.
- *The Humanitarian Principle*: Any of the above, but with the first priority be to cause no hurt.

- *The Liberal Principle*: Checking of each by each is the only legitimate way to decide who is right (Rauch, 1993, 6).

He further comments that "the last principle is the only one which is acceptable [in a modern democracy], but ... it is now losing ground to the others, ... this development is extremely dangerous," and that "[i]mpelled by the notions that science is oppression and criticism is violence, the central regulation of debate and inquiry is returning to respectability - this time in a humanitarian disguise" (Rauch, 1993, 6).

As Rauch suggests, the first four modes of thought are threats to rational, informed debate, and thus to university scholarship. Traditionally such threats have come from sources external to the university, and the first is well understood. Typical recent Canadian examples are attacks made on Sikh studies programs, first at the University of Toronto, and then at the University of British Columbia. In both cases, on the basis of scholarship, academics had drawn conclusions about the origins of Sikhism that were contrary to the accepted dogma. The protests and actions taken by the respective Sikh communities, which partly funded these programs, effectively destroyed them.

But a relatively new phenomenon is increasing emphasis on the second, third and fourth principles, combined with active participation by universities in their advancement. With universities traditionally being white male preserves, much of this phenomenon seems to have been associated with attempts to include women and ethnic minorities in university life. In order to make North American academia more inclusive, we have seen the institution of speech codes, harassment policies focussing on sex and race, employment equity policies, and student admission policies based on non-academic considerations. Often introduced by white male administrators, these have for the most part been generously motivated by a desire to avoid offence to colleagues and students, and to reinforce values of cooperation and collegiality. A more sinister aspect, however, is the politicization of the concept of offense in a way that demonstrably inhibits scholarship and disrupts university life. Two of the most spectacular Canadian examples are the so-called "chilly climate" investigations of the political science departments at the Universities of Victoria and British Columbia. An unnoted but disturbing aspect of these debacles was the conflation by their feminist proponents of the concept of personal harassment with objections to feminist scholarly practices. The impact of these policies has often been divisive and counterproductive, leading political scientist Abigail Thernstrom to assert that "Our university campuses are now islands of repression in a sea of freedom" (D'Souza 1991, 227).

The principal objective of this paper is to explore the sources of this phenomenon as a prelude to suggesting remedies. I aim to demonstrate that its roots lie in a vicious combination of shoddy scholarship and postmodernist attacks on rationality. I argue that, in certain disciplines, the shoddy scholarship includes pseudoscience and outright charlatanism. I further suggest that, when combined with the universal human propensity to censor, these influences are particularly destructive.

### ***Censorship, Ancient and Modern***

History is replete with examples of the destructive effect of censorship on scholarship in the name of religion or other ideology. One, which inhibited the development of science and mathematics in Christendom for a millennium, began with the murder in 415 AD of the philosopher - mathematician Hypatia of Alexandria by a Christian mob. Subsequently Christians shut the Great Library, which was a treasury of Greek mathematical and scientific knowledge. These actions accurately reflected the intellectual stance of the era, summarized succinctly by St. Augustine of Hippo [354-430], who wrote: "Whatever knowledge man has acquired outside Holy Writ, if it be harmful, it is there condemned; if it be wholesome, it is there contained" (in Hollingdale, 1989, 92). Mathematician Morris Kline observed that, as a direct consequence, "From the years 500 to 1400 there was no mathematician of note in the whole Christian world" (in Hollingdale, 1989, 92).

A modern example of censorship supporting the congeries of ideas we now call "political correctness" is a 1981 symbolic book burning at the First Unitarian Church of Baltimore. At a ceremonial expurgation of allegedly sexist remarks and ideas, excerpts from ancient religious classics such as the Torah and the Qur'an, as well as quotations from theologians such as Kierkegaard, were set alight by candle, accompanied by peals of an organ. As US civil liberties advocate and author Nat Hentoff (1993,1-2) noted, "children present at that Sunday morning service were likely to have learned a powerful lesson. When speech offends, burn it."

It is especially disturbing when censorship to satisfy the ideological concerns of special-interest groups occurs in universities; yet Hentoff is just one of many writers to document a litany of examples. I describe one, because it is a clear attack on scholarship. In a Hawaii divorce proceeding, a family court judge awarded custody of a child to the mother who was then living in a lesbian relationship. A Supreme Court judge in that state subsequently gave the father leave to appeal. The New York University Law School chose the case for a prestigious student moot court competition which is adjudicated by practising judges, sometimes from the US Supreme Court. Women law students assigned to argue the father's case objected that it was offensive to their views. After a campus brouhaha, the Law School withdrew the case because, for some faculty members, the issue "was not an open question in a law-school community that has a policy of condemning anti-gay biases"(Hentoff 1993, 201-204). Commenting on the increasing frequency of such incidents, Hentoff (1993, 1) recalled the words of a journalist colleague: "Censorship is the strongest drive in human nature; sex is a weak second."

### ***On Science and Pseudoscience***

As a prelude to discussing the issue of shoddy scholarship, for two reasons, I explore the nature of scientific knowledge. First, the obvious success of the natural sciences provides

a basis for thinking about other disciplines; second, I am increasingly inclined to dismiss much of the social sciences as pseudoscience. Scientists invariably practise the doctrine of *scientific realism*; for the physical sciences, the basic elements of this doctrine have been stated by physicist John Barrow as:

- There is an external world separable from our perception.
- The world is rational: 'A' and 'not A' cannot be simultaneously true.
- The world can be analysed locally; that is, one can examine a process without having to take into account all the events occurring elsewhere.
- We can separate events from our perception of them.
- There are predictable regularities in nature.
- The world can be described by mathematics.
- These presumptions are universal. (Barrow, 1988, 24-26)

One of the characteristic features of physics and related disciplines is reliance on the interpretation of events that can be repeated. It is this repeatability which enables the scientists to achieve a consensus of interpretation which transcends culture and which is one of the striking features of a science-based discipline. A second feature of those disciplines making extensive use of mathematics to express basic principles is an ability to make accurate predictions of events never before observed. An example familiar to me is the specification of trajectories and timing of space missions. While philosophers continue to argue endlessly about the epistemological nature of scientific inquiry, such successes leave little room for doubt in the minds of practitioners that, to paraphrase Einstein, God is a mathematical scientist who does not play dice with the physical world.

In the historical sciences, including astrophysics, archaeology, palaeontology and history itself, repeatability and prediction is not possible. The main feature of these sciences is the search for a consensus on the interpretation of evidence. As physicist Alan Cromer (1997, 58) puts it, “as long as investigators can search for their own bones and pots, or can examine those found by others, the critical re-examining process of science remains intact.” It is in this sense that Rauch uses the term liberal science: “[T]he whole liberal intellectual system, from the hard science to history and even to journalism is really little more than an endless self-organising hunt for error” (Rauch 1992, 134). And, in a discussion of the scientific status of the discipline of history, historian Keith Windschuttle observes that “Western science has trumped all other cognitive styles ... [it] works, and none of the others do with remotely the same effectiveness” (1997, 281).

While in general there are no precise rules for distinguishing pseudoscience from science, examination of belief systems such as astrology and parapsychology suggests certain clear signs. Following the discussion of Queens University political scientist J. W. Grove (1989, 147-148), we may say that a pseudoscience:

- Lacks an independently testable framework of theory that is capable of supporting, connecting, and hence explaining the claims.
- Lacks progress.
- Tends to evaluate the quality of evidence, not on its intrinsic merits, but on its consistency with a pre-ordained conclusion.
- Usually constructs its ideas in such a way as to resist any possible counter-evidence.

I agree with Grove's observation that the last characteristic is often the most noticeable; a good example is the tendency of those claiming paranormal powers to assert that any attempt at a controlled experiment interferes with their powers, thus leading to an impasse in any investigation. However, the third is also a prominent feature of pseudosciences such as creationism. As an engineering scientist, I note widespread reference to Marxism and psychoanalysis in such trendy areas as literary theory and cultural studies; many examples are given by Windschuttle (1997). I take this to be a tell-tale sign of pseudoscience, and suggest that—on close examination—they will be shown to possess the characteristics I list above. In this respect I note Windschuttle's description of the current crop of literary and social theories:

[L]arge-scale generalizations about human society or human conduct are taken as given before either research or writing starts... Any evidence that might be brought into play is used to confirm the theory that is already chosen... The [currently fashionable theories are] quite hostile to most of the traditional [ i.e., narrative and inductive] assumptions of historians (Windschuttle, 1997, 19-20).

### ***From Relativism to Irrationalism***

A characteristic feature of twentieth century Western thought is the growing influence of the doctrine of *relativism*, which asserts that there are no absolutes in morals, values or knowledge. Historical journalist Paul Johnson (1984, 1-11) argues that experimental confirmation just after World War I of Einstein's theory of relativity in physics played a

major role in spreading acceptance of the doctrine amongst intellectuals but, as others have noted, it actually has no philosophical relationship to Einstein's theory. The doctrine of *post-modernism*, which seems to be a particular application of relativism to scholarship, maintains that "there are no facts, only interpretations, and no objective truths, only the perspectives of individuals and groups" (Windschuttle, 1996, 25). An extension of this idea is the concept of *social or cultural constructivism*, which has been described by one of its proponents in the following terms:

Knowledge can never be considered true in the conventional sense (e.g. correspond to an observer-independent reality ... Truths are replaced by viable models—and viability is always relative to a chosen goal (as quoted in Cromer, 1997, 10-11).

As a direct result, cultural constructivists make some very specific claims about science as practice and as knowledge; following a commentary by philosopher Susan Haack, they may be succinctly summarized as (Zurcher, 1996a):

- Social values are inseparable from scientific inquiry.
- The purpose of science is the achievement of social goals.
- Knowledge is nothing but the product of negotiation among members of the scientific community.
- Knowledge, facts and reality are nothing more than [cultural] constructions
- Science should be more democratic.
- The physical sciences are subordinate to (i.e., a subdiscipline of) the social sciences.

Haack emphatically denies every one of these claims.

Windschuttle's description of the major tenets of the currently fashionable theories in the "new humanities" bears many similarities; the major elements are (Windschuttle 1997,12):

- Inductive reasoning and empirical research cannot provide a basis for knowledge.
- Truth is relative rather than absolute, so that different intellectual and political movements create their own form of knowledge.

- Scientific theories are inventions and not discoveries, so that they can never be value-free or objective.
- The traditional divisions of academic disciplines is inappropriate.

The widespread acceptance of these ideas in the humanities and social sciences has led to predictable consequences. For example, many constructivists claim that one cannot legitimately distinguish between science and pseudoscience, and that allegedly alternative sciences such as creationism, afrocentrism and even astrology must be treated with respect, especially by our educational system. Another, described in detail by biologist Paul Gross and mathematician Norman Levitt (1994), is the presumption by humanist critics of science that they do not need to understand the content of a scientific subject in order to pronounce upon it. A third, documented by Windschuttle (1997), is that crucial classifications such as the distinction between history and fiction are erased. A fourth, following the precepts of historian and cultural studies guru Michel Foucault, is to treat all knowledge as contaminated by power relationships (Windschuttle, 1997).

The fourth idea is especially pernicious; it politicises scholarship, leading to two predictably disastrous consequences. First, it leads to the replacement of evaluation of the intrinsic merits of evidence by ad-hominem argument. Hence, following traditional Marxist tactics, in order to dismiss an argument as being unworthy of consideration, it is only necessary to identify the political or social group to which the argument's proponent belongs; as Windschuttle (1997, 132) puts it, talk about issues is replaced by "talk about talk." The second consequence is a tendency to take seriously only the work of like-minded individuals, a phenomenon I call *intellectual tribalism*. The insiders' account of women's studies programs provided by Daphne Patai and Noretta Koertge (1994) graphically illustrates the extent to which feminist scholarship is contaminated by these practices. It was the motivation for the feminist chilly climate investigations I cite above.

As might be expected, these ideas have also led to the abandonment of any pretense at standards; anything goes. In particular, all of these developments open the door for a descent into irrationalism. This development is attracting attention from outside of academe; for example, art critic Robert Hughes, in an essay entitled *Culture and the Broken Polity*, quotes a fifty year old prediction by poet W. H. Auden: "Reason will be replaced by Revelation... Knowledge will degenerate into a riot of subjective visions" (Hughes 1993, 3). Hughes argues that Auden's prediction has come true; he describes absurdities produced by academics in the name of cultural criticism, together with an enthusiastic approval of this sorry development. In a commentary that seems impossible to parody, Chicago professor of English and education Gerald Graff states:

[N]arrow canons of proof, evidence, logical consistency and clarity of expression have to go. To insist upon them imposes a drag on progress. Indeed, to apply strict canons of objectivity and evidence in academic publishing today would be ... [to cause] the immediate collapse of the system (as quoted in Hughes 1993, 77).



### *Selected Examples of Shoddy Scholarship*

One of the first descriptions of the problems that have developed was provided a quarter century ago by British sociologist Stanislaw Andreski. He depicts much of the social sciences as sorcery; or pseudoscientific gibberish intended to placate special interest groups or to confound the opposition. Among the many examples he quoted was the use in a text by a respected anthropologist of pseudomathematical expressions such as "Jaguar = (anteater)<sup>-1</sup>..." (Andreski, 1972). Gross and Levitt (1994) sounded the wake-up call for the natural sciences; they demonstrate in stupefying detail the ignorance, incompetence, absurdities and outright charlatanism that passes for scholarship in cultural studies accounts of science. In describing the extensive misuse of mathematical and scientific terms that is characteristic of much of this work, Gross and Levitt observe that "Scientists ... have no choice but to regard the whole business as a species of con game" (Gross and Levitt 1994, 79).

In this regard it is interesting to note the response of one of the targets of Gross and Levitt's stinging criticisms, sociologist Bruno Latour. Latour, who is one of the luminaries of the game, replied:

[T]he opinions of scientists about science studies are not of much importance. Scientists are the informants for our investigation of science, not our judges... With apologies to the narcissistic egos of scientists, the inner workings of their trade do not resemble commencement addresses and honorific speeches" (Latour 1988).

Apart from the obvious straw-man device in the last sentence, this dismissal contains three characteristic traits: ad-hominem attacks at both the personal and group level combined with the pseudo-scientific device of rendering sociologists' accounts of science immune to external criticism. Recently, being disturbed by Gross and Levitt's accusations, and by the lampoon published in *Social Text* by physicist Alan Sokal (Gottfried, 1997), I sought verification by reading selected papers. I examined two in detail, and presented my findings in a second book on the flawed nature of the cultural studies accounts edited by philosopher Noretta Koertge (Sullivan, 1998b). In this chapter I dissect two papers. The first is a purported hermeneutic interpretation of my discipline, fluid mechanics, by feminist humanist Katharine Hayles (1992). Hayles manages to either get wrong or grossly misinterpret every single one of the many technical issues she addresses; some of these concepts are well-known to undergraduate students in mathematics, physics and engineering. It is as if, as a prelude to seeking occult meanings in the game of chess, she misdescribes every move. The second paper is sociologist Donald MacKenzie's (1978) examination of an early twentieth century dispute between two statisticians about the interpretation of data on the effectiveness of vaccines in reducing mortality from diseases such as small-pox and cholera; the protagonists proposed different methods, giving conflicting results. MacKenzie argues that the dispute arose because it could not be settled on mathematical principles and the laws of probability alone, so that social values can enter the content of statistics. But anyone having facility in mathematics can see that MacKenzie is wrong; one of the proposed

methods does not actually solve the problem because it cannot specify a unique answer. But this is not all; detailed examination of MacKenzie's references shows that he misrepresents them, sometimes in surprisingly obvious ways. I believe that, if these examples of intellectual tribalism had been subject to appropriate interdisciplinary review, neither would have seen the light of day.

Wake-up calls have also been made in the humanities; Windschuttle's devastating analysis of the effects on history is the most recent. As an example, he describes Foucault's description of an animal taxonomy supposedly taken from an ancient, but unnamed, Chinese encyclopaedia. This evidence is, apparently, widely cited by cultural constructivists to bolster their position that there are equally valid alternatives to taxonomies based on evolutionary principles. But it turns out that there is no such classification; as Foucault himself apparently acknowledges, the taxonomy is merely a hypothetical possibility taken from a work of fiction (Windschuttle, 1997, 253-255).

To illustrate the seriousness of the problem, I now cite two examples which I find particularly outrageous. The first is in political science, and the second is in anthropology. In 1977 graduate student Anne Koblitz was given an assignment which involved reading a 1971 paper by eminent Harvard University political scientist Samuel Huntington; in this paper he had written a sequence of mathematics-like expressions resembling divisions (written here as  $6/3 = 2$ ):

$$( \textit{social mobilization} ) / ( \textit{economic development} ) = \textit{social frustration},$$

$$( \textit{social frustration} ) / ( \textit{mobility opportunities} ) = \textit{political participation},$$

$$( \textit{political participation} ) / ( \textit{political institutionalization} ) = \textit{political instability}.$$

Huntington was incredibly sloppy; according to one account, he did not define these variables, discuss how they could be quantified, or even attempt to give them units (Bunge, 1996). Furthermore Koblitz, whose husband was a mathematics professor, pointed out that if this expression was manipulated by the usual mathematical rules it implied that:

Social mobilization is equal to economic development times mobility opportunities times political institutions times political instability.

Husband Neal Koblitz published it in an article entitled "Mathematics as Propaganda"; he accused Huntington of "mystification, intimidation," as well as creating a false "impression of precision and profundity". At one stage Huntington protested that he was merely trying to summarize a difficult argument, whereupon others commented that plain English would have been much more effective. This article eventually became an issue

when, in 1986, Huntington was nominated for election to the US National Academy of Sciences (Sykes, 1988, 208-211). Following publication of Koblitz's article, mathematician Serge Lang successfully campaigned against Huntington's nomination. The saddest part of this tale is that other social scientists did not run for cover, instead Huntington was stoutly defended by many eminent colleagues.

My second example illustrates the determination of social scientists, and particularly the feminist variants, to impose the doctrine of cultural determinism on anthropology by finding evidence of matriarchal cultures. In a 1935 text anthropologist Margaret Mead described the men of the (head hunting) Tchambuli tribe as "effete (sic!)", and the women as "comradely," hinting that this society had matriarchal elements. After much criticism she repeatedly denied that this could be interpreted in this way. Yet, over 50 years later, sociologist Steven Goldberg surveyed 38 introductory sociology texts and found that 36 quoted Mead's 1935 remarks as evidence of matriarchal influence. As Goldberg puts it, "[It is the social sciences] that first, most completely and most nakedly exhibited the contemporary tendency for ideological wish to replace scientific curiosity" (Goldberg 1991, pp 172-174)

### ***Cultural Constructivism in Science and Mathematical Education***

These problems of scholarship would be bad enough if they were merely confined to universities, but they are now beginning to have a broader impact. For example, in Australia, architectural schools have been influenced to such an extent that many of their graduates are described by potential employers as "very well versed in postmodernist theory but poorly educated in structure, construction and budgeting and, as a result, barely fit for practice" (Windschuttle, 1997, 13). Worse still is the influence of constructivism on elementary school science and mathematics education; because of its widespread importance, I discuss it here.

Professor of education Michael Matthews (1993) notes that constructivist teaching methods are "the subject of major international conferences, the topic of hundreds of journal articles, and is the foundation of many science-teacher training programs..." In terms of educating children, constructivism means that the transmission concept of teaching is abandoned completely in favour of a system in which, through their own activities, construct their own individual version of their perceptions of reality. Each student is encouraged to develop concepts which are said to "make sense" or are "viable" in the light of that individual's past experience (Cromer 1997, 11). As part of this approach, apparently as a motivational device, constructivists encourage students to work from the complex to the simple. Thus, when introducing the concept of pressure in the physics of fluids, instead of working with configurations that are amenable to interpretation with simple mathematics applied to well-controlled configurations, and leading to convincing demonstrations of such precise and proven ideas as Pascal's principle, pressure is to be introduced when talking about weather phenomena such as hurricanes. The role of the teacher as a source of expert knowledge is deliberately suppressed; they become, as the jargon would have it, "facilitators."

Needless to say, when working scientists are apprised of this philosophy, they are invariably aghast. Science has not progressed by attempting to “make sense” of the confusing phenomena of direct personal experience, it has progressed by developing concepts and principles which are almost always antithetical to everyday commonsense, but which ultimately prove extremely successful in organizing our knowledge of the physical world. This understanding usually involves initiation into complex technical language and subtle ideas teased out of the results of many experiments. Furthermore, from 35 years of experience in research in engineering science, I can affirm that it is a disaster to work directly with complex systems as a way to understand the phenomena. As a specific example, since 1974 I have been advising a Canadian company on the development of a unique materials handling device using thin films of compressed air to reduce sliding friction. I have had an ongoing battle with the company; they always wanted to test the complete system because it represented the “real world.” The record shows that this led them up one blind alley after another; it was only when I convinced them to fund research on suitably simplified configurations that we started to make progress.

Cromer describes an example from a recent US introductory text-book which graphically illustrates the problems that constructionism creates. The book instructs students to listen to the sound of popcorn popping. They are told to crouch beside their desks and to move up and down according to their perception of the intensity or rate of popping. They are then expected to draw a graph - with their eyes closed (sic!) What is the point of this exercise? It can hardly be to demonstrate concepts of experimental design, measurement and repeatability. Apparently, this is meant to demonstrate diversity (whatever that means). This travesty is in a seventh grade text purporting to introduce the students to science. (Cromer, 1977)

In spite of these obvious difficulties, constructivist educators have taken control of elementary science education in many western countries. In the USA individuals having, at best, a rudimentary education in the sciences are now developing policies, curricula and text-books, with predictably disastrous consequences. The current crop of US elementary school science texts are riddled with elementary errors, undefined terms, misconceptions and assertions having absurd consequences (Cromer 1997, 12). New Zealand is so committed to nonobjectivity that it has removed demonstration tables having specially designed experiments from all classrooms. Apparently, “this is to prevent teachers from claiming to know more than their students, thus unduly influencing how the students construct their own knowledge” (Cromer 1997). According to Matthews (1995, p. 12), “the country is being led “into an educational and scientific abyss.”

Similar concepts and problems occur in the teaching of mathematics. According to one account, in an approach known as “whole math,” students are expected to develop their own methods of addition and multiplication, and to achieve this by asking questions of one another rather than of the teacher (Cheney, 1998). They are also told that approximate answers are “good enough.” Furthermore, as in the teaching of physics, simple examples which clearly illustrate the logic and rules of mathematical manipulation are eschewed in favour of analysis of supposedly real-life problems. Cromer (1997, p.

144) cites examples promoted in one US state curriculum such as “what are the most important factors for me to consider in purchasing a car? What weight should I give to each factor?” As he notes, although superficially attractive as a motivational device, this approach has the effect turning instruction in mathematics into exercises involving value judgements; since there is no empirical or logical way to determine such judgements, this undermines the inculcation of concepts of logic and objectivity that is one of the benefits of a training in mathematics.

In the USA this method of teaching is being actively promoted by the Education Directorate of the National Science Foundation (NSF) through grants to various State Boards of Education. Comments by NSF grant recipients reveal clearly that constructivist teaching methods are based on a well-defined ideological agenda: to “transform science from ‘a white male domain’ to an undertaking more in tune with ‘the sensibilities and values orientations of the under-represented’ [and to] ‘expand the caricatured image of science’ from ‘logical’ to ‘creative’ and from ‘competitive’ and ‘creative’”(Cheney, 1998). Canadians can instantly recognise this as the social engineering of equity advocates seeking to impose equality of outcome.

Interestingly, Cromer offers a sociological explanation for the success of constructivist science education which is pertinent to the present discussion. Noting that US schools of education have been “notorious for a hundred years for their low academic standards” he suggests that they are producing scientifically illiterate educators who have isolated themselves from working scientists. This group has “enthusiastically endorsed constructivism because it allows them to speak only about process (whatever that is) rather than content (of which they are ignorant)” (Cromer, 1997, 11). Thus it legitimises their status and power.

It is important to note that, at least in the USA, there is a groundswell of revolt against constructivist teaching methods. Cromer notes that, when science teachers were sequentially exposed to experimental demonstration workshops run by a constructivist and by an academic scientist, they immediately rejected constructivism; as one put it, the “Difference between the [constructivist’s] demonstration on buoyancy and [the scientist’s] was like night and day.” In 1993, following legislation enacted as a direct result of pressure from the Massachusetts business community, faculties of education lost most of their roles in training teachers (Cromer, 1997, 181). Also evidence is now accumulating that shows that, instead of benefitting women and minorities, whole math lowers basic skills in all groups. In late 1997, the California State Board of Education voted unanimously to revert to traditional approaches of teaching math (Cheney, 1998).

### ***Correcting These Trends***

It would be presumptuous of me to address all the problems of contemporary scholarship; I will focus instead on those aspects that I understand and that seem to me to be susceptible to intervention now. These are: academics' role in improving scholarship

within their disciplines and in selected interdisciplinary contexts; ways to ensure that students receive a genuine education rather than being subject to forms of indoctrination; and how to reach a better understanding of the aspects of pedagogy essential for rational research and scholarship. Also, in terms of tactics, I suggest that such forums as campus-wide debates on the nature of acceptable scholarship, while valuable, must be supplemented by other actions. Furthermore, owing to interests now well-entrenched in academe, these actions will resemble guerilla warfare.

First, let me briefly review what scholars such as Gross and Levitt (1994) have to say about solutions. It is somewhat disappointing that, after presenting a detailed and telling analysis of academic problems, they have little to suggest by way of corrections for the "diagnosed evils" and anticipated disasters, but they are the first to admit that their list of solutions is "disconcertingly sparse" and "unheroic" (1994, 252). They rightly reject anything like a purge of institutions of higher learning that would rid education of poor scholars and teachers; replacing politically correct regimes with other high-handed ones would serve no purpose. Their first exhortation is that educators must be constantly vigilant, especially to identify insertion into the curriculum of content that serves ideological factions. True educators must be ready to reject the argument that all information is inevitably value-laden and ideological, and to reassert the principles of rational discourse and research. More specifically, scientists must take seriously the responsibility to challenge courses, seminars and conferences that are organized by non-scientists but claim to address scientific matters: scientists should even attend the meetings and give voice to their misgivings (1994, 254). Scientists must find the ways to expose shoddy scholarship and to reclaim lost territory for the scientific approach in subjects like anthropology, sociology, and psychology.

These suggestions, while basically sound, do not take us very far. I think they may not encourage much action, given the many factors that inhibit effective response on the part of academics, especially young scholars who are building their careers. It is not easy to break into the tribalistic meetings of sociologists, for instance; and it takes a brave person to stand up to the treatment that may be meted out to one who challenges the prevailing orthodoxies of disciplinary groups.

Furthermore, how many busy serious scholars are going to spend time going to conferences of relativists and engaging in debate, only to be ridiculed in the manner described by Rita Zurcher (1996a)? Even attending a lecture open to opposing points of view may be no guarantee of being heard, as the debacle of the repressed memory syndrome lecture at McGill University in 1993 demonstrated; feminist scholars shouted down an invited lecturer (Furedy 1997a). Nonetheless, the principle of challenge is central in the combative arsenal of concerned scholars. I refer to some recent examples of challenges to the erosion of good scholarship, and suggest that we need much more airing of the success-stories, no matter how small each victory may seem.

I have cited several pioneering books that are exposing the tainted scholarship and doctrinaire teaching methods; these are extremely effective although, as I can now attest, such an approach can involve considerable effort that usually interferes with one's

regular scholarly activities. Other books in this spirit that should be mentioned include the exposures of feminist scholarship and teaching methods by Christina Hoff Sommers (1994), and the analysis by journalist Richard Bernstein (1994) of the problems created by constructivist approaches to multiculturalism. Very recently, Jack Granatstein (1998), following Windschuttle's example, explored the impact on Canadian high-school history teaching. The issue of *The Monist* edited by Susan Haack and Barry Smith (1994) exposing the problems in feminist epistemology should also be mentioned.

We should also identify and publicise the substantial ground-swell of support that is building in academia. There must be many examples of individual initiatives, where dedicated educators have spoken out against course proposals that serve political ends, have attended meetings to challenge the prevailing ideological fashion, and have, through their own teaching and scholarship, shown the flag for rationality and excellence. Ruth Gruhn, speaking as incoming president of the Society for Academic Freedom and Scholarship (SAFS), suggested that there are hopeful signs that the tide is beginning to turn in the discipline of anthropology, although she also noted that the politically correct bent of the editorial boards of major anthropological journals has prevented the airing of challenges to the prevailing orthodoxy (Gruhn 1998). We need to learn more about the individual initiatives and the emerging trends that will encourage independent scholars. The journal of the US National Association of Scholars (NAS), *Academic Questions*, has lately given much attention to issues of course and conference content. This journal also encourages exchanges of view; an excellent example is an exchange between Suedfeld and Lakin (1997) on the subject of sensitivity training programs in American universities. Internet listserves such as ACADFREE are also giving more exposure to attacks upon scholarship. The newsletter of the Society for Academic Freedom and Scholarship also plays a small role, and our new home page will further this goal.

Another encouraging sign is the attention being paid by professional societies, which organise symposia or sessions at meetings on the issue. For example, in 1996, the annual meeting of the Society for Neuroscience in Washington featured a session the effects of political correctness on neuroscientific progress (Zurcher 1996b); it was co-sponsored by the NAS and SAFS. A similar symposium was mounted at the Canadian Psychological Association convention in Charlottetown in 1996, and the proceedings were published (Gauthier, 1997); an important feature of this publication is a section in which the six primary authors comment on the other papers in the collection. This section does much to illuminate the debate about political correctness.

It is also significant that a journalist of the London Free Press wrote a positive column on this publication (Leishman, 1998). As the reaction to constructivist education I describe above shows, the general public is likely to be an important source of support.

The stand that SAFS has taken against the changes to the code of ethics for research sponsored by the major funding agencies in Canada has been noted by several journals and newspapers, including *Science* (Holden, 1996). The draft code of ethics, proposed in 1996, would have allowed subjects to withdraw their responses from studies later if they did not agree with the nature of the research and would have allowed ethics committees

to pass judgment on the scientific merit of grant applications. The insistence of SAFS members in pointing out the implications of the draft code (intimating that it would make Canadian research an international laughing stock) led to changes in the clauses I have mentioned. The SAFS stand was one of "ethical humility but epistemological arrogance."

An obvious question is: are not these publications and the relatively small conferences of organizations merely preaching to the converted? In the main this is correct, but the publications and conferences in these organs are emboldening scholars to seek wider audiences. These publications also encourage scholars to explain the disciplinary problems in detail in language that non-experts in the field can understand; this is essential if the message is to get out to society at large.

The few examples I cite do, however, demonstrate that small groups, and even individuals, can have an impact on the structure of academic conferences, on scholarly publication and discourse. I think that an important spin-off from the publicizing of individual efforts is to contribute to the awareness of self-censorship among academics. (See, for example, Horn 1992 and Furedy 1997a). Those who speak out demonstrate that one need not be silenced by the prevailing climate of discourse in universities. The urgent challenge is to find ways to support those who are not able to expose threats to scholarship by publishing books and articles.

Turning now to the issue of indoctrination of students, much has been written about the subtle and not-so-subtle forms that have seeped into higher education. As an example, Patai and Koertge (1994) describe techniques used in women's studies programs which are tantamount to brainwashing. However, apart from such insider accounts, obtaining detailed evidence of these intrusions is not easy. A study supported by the Donner Canadian Foundation into the impact of political correctness in universities first proposed to evaluate course outlines along an indoctrination-education axis. But the brief course outlines that appear in university calendars are not susceptible to such analysis. Instead the study looked at articles published on university teaching in newsletters of units devoted to the improvement of instruction. One of the dimensions of the "political correctness estimate (PCE)" devised in this study was "education vs. indoctrination." The study found that whether or not the university was unionized under a labour relations act was a relevant variable: unionized universities had a higher overall average PCE than non-unionized universities (Furedy 1997b).

Another potential source of information on the degree of indoctrination is the students themselves; many students I encounter are quick to identify and disparage courses in which success depends on parroting the lecturer in assignments and examinations. Thus one way of ascertaining the extent of the problem might be to include a question on student evaluation forms designed to probe student perceptions on this point. This idea was discussed at the 1998 SAFS annual meeting, but it was concluded that formulating such a question unambiguously would be very difficult. Nevertheless, some type of survey instrument may be appropriate.



There are also examples of faculty resisting the intrusion of non-academic considerations into courses; furthermore, it often turns out that the instigators of such intrusions are the institution's "equity" officers. For instance, as a member of the University of Toronto's Academic Board, John Furedy challenged an attempt at the University of Toronto to give power to an advisory committee on race and ethnic relations to vet course outlines and even classes. Similarly, this year, Furedy and I questioned the nature of a proposed University of Toronto "Equity Studies" program. Letters in a student newspaper and questions at Academic Board meetings opened up a debate about the proposal, which would have otherwise slid through unwatchful curriculum committees (Sullivan 1998a, Furedy 1998b). The outspoken responses of faculty at the University of Western Ontario to the proposed introduction of a stifling speech code included letters the president and vice-president of administration, letters to the student and local press and vigorous questions in the university senate (Hilborn 1998).

Some more general aspects of graduate education in North America may have fostered the slide to politically correct curricula and scholarship; in some disciplines there may be a need to scrutinize the relationships of graduate students to supervisors. Does the "graduate student as slave" model prevail, or is the graduate student genuinely able to engage in debate with the supervisor over central assumptions and methods in research? How strongly does one's university insist on competent external examination of doctoral dissertations? In the case of theses that venture into interdisciplinary areas, are experts in the appropriate disciplines included as advisors and examiners?

There are important indications that students are asserting themselves to rescue education, albeit in small numbers. For a view of the more general reactions of students in US universities, one should consult the paper by Paul Trout (1997). A student-run organization using the appropriate acronym SAVE (Students Advocating Valid Education) has been formed in Kansas; it is supported by the Kansas-based Foundation Endowment, a policy research group dedicated to "raising academic standards and combatting classroom indoctrination." The SAVE newsletter declares: "We stand for classical American liberalism and genuine education," while stressing that their philosophy "embraces ideas held today by people of conservative, liberal and moderate political persuasions." The organization has a web site ([www.savenet.org](http://www.savenet.org)).

It is important that students understand that faculty regard academic freedom as including students' rights to a genuine, indoctrination-free, education and to be selected and evaluated according to merit. In spite of the fact that student membership of SAFS is very small, this is why SAFS has stressed this broad conception of academic freedom.

The co-operation of student organizations to allow debate of issues in higher education is illustrated by the meeting on affirmative action at Michigan University in November 1997. It was sponsored by the Michigan Students Association (MSA), the Womens' Issues Commission and the MSA Minority Affairs Commission, together with other student groups. The student representatives apparently had more courage than the faculty;

no US faculty member could be found who was willing to put the case against affirmative action in universities! (Furedy 1998a)

Finally, I briefly mention the need for more research on aspects of our educational values that are vital to maintaining the norms of scholarship that I referred to at the outset. While science takes critical thinking for granted, it is by no means clear that this is understood and accepted as an important component of higher education throughout the university. Indeed, constructivists have hijacked the adjective "critical," giving it a rather different connotation from the Socratic tradition. For many young scholars, the concept of critical thinking that we knew and accepted has little meaning. Leaving aside the connotation of "critical" as in "critical labour studies," there is the confusion caused by the talk of "critical skills" in undergraduate education. "Critical skills" is now often used now to refer to basic communicative-analytical behaviours such as reading with comprehension, writing clearly and interpersonal skills. The Socratic notion of critical analysis is not necessarily implied. There is a need to recover the common ground of this concept and reassert it in all levels of higher education (Furedy 1997b).

### ***Conclusion***

To succinctly state the issues, I can do no better than use the words of two philosophers quoted by Matthews in the conclusion of his critique of science education in New Zealand. The first is Michael Devitt, who tells us:

I have a candidate for *the* most dangerous contemporary intellectual tendency, it is ... constructivism. Constructivism attacks the immune system that saves us from silliness.(as quoted in Matthews 1995, 210)

The second is Karl Popper:

[T]he belief in the possibility of a rule of law, of equal justice, of fundamental rights and a free society can easily survive the recognition that judges are not omniscient and may make mistakes about facts... But the belief in the possibility of a rule of law, of justice, and of freedom, can hardly survive the acceptance of an epistemology which teaches that there are no objective facts... (as quoted in Matthews 1995, 211)

Next, I quote one of the most influential political leaders of the modern age:

We are now at the end of the Age of Reason... There is no truth either in the moral or the scientific sense... Science is social phenomenon ... The slogan of objective science has been coined by the professorate to escape from the very necessary supervision of the power of the State (as quoted in Cromer, 1977, 22).

These are the words of Adolf Hitler.

The message is clear: universities and colleges must renew their roles as standard-bearers for society in rational debate and the evaluation of evidence; decline in this function is no less than a serious threat to western civilization.

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