

Social Responsibility over Academic freedom: Emphasizing Ethics and Codes of Conduct geared for a Scholar's duties towards science, society and the education system in Twenty-First Century Science

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Abstract

This paper explores the twin issues of Academic Freedom and Social Responsibility among researchers and scholars, and gaps in theory and praxis as well. It also discusses the current application of ethics and objectivity in science, and discusses the need for change so as to highlight a scholar's duties towards science, society and the education system. It also takes vital clues from various fields of social sciences such as Sociology and Anthropology besides other sciences and investigates their relevance to the tenets of this paper. It summarizes key issues in the debate between Academic Freedom and Social Responsibility and emphasizes the need for Social Responsibility while underlining the dangers of unbridled Academic freedom to society and the education system. We link this paper to our earlier publications including *Historiography by Objectives*, *Principles of Twenty-first Century Historiography*, and *Anthropological Historiography*, besides the sociology of science and Anthropological pedagogy, and see how this can have a bearing on Ethics and Codes of Conduct in science in general. Such ethics and codes of conduct are currently patchy at best, and must be consolidated and reinforced, and must emphasize a scholar's duty towards science, society and the education system. Thus, academic freedom cannot override social responsibility, or be contrary to it. Such approaches are likely to raise eyebrows and face stiff resistance from vested interests and cabals around the world but these need to be encountered and surmounted in the interest of scholarship and science. This also becomes necessary because most academicians hold paid positions, and definitions of social responsibilities must be preferably driven by university mandates. Needless to say, movements emphasizing social duties must be extended to all fields of the social sciences, besides the physical sciences, and must become one of the important movements of the Twenty-first century.

Introduction

This paper, which is an essential part of the “globalization of science” movement explores the twin issues of Academic Freedom and Social Responsibility among researchers and scholars, and discusses gaps in theory and praxis pertaining to these issues as well. It also discusses the current application of ethics and objectivity in science, and discusses the need for change so as to highlight and emphasize a scholar’s essential duties towards science, society and the education system. It also takes vital clues from various fields of social sciences such as Sociology and Anthropology besides other sciences and investigates their relevance to the tenets of this paper. This is because even though the scope for social responsibility is highest in the social sciences which differ fundamentally in methods of research and their relation to society (but competitively poorly recognized and realized), it comes into play in other sciences as well. This paper throws more light on the age-old debate between Academic Freedom and Social Responsibility and emphasizes the need for Social Responsibility while underlining the dangers of unbridled Academic freedom to society and the education system. Responsible academic freedom can arguably be permitted and even nurtured, though provided there are no fundamental inconsistencies and contradictions with the discharge of a scholar’s social duties and responsibilities. Only the socially irresponsible would argue for no-holds barred academic freedom. We link this paper to the essentials of our various earlier publications including *Historiography by Objectives*, *Principles of Twenty-first Century Historiography*, and *Anthropological Historiography*, besides the sociology of science and Anthropological pedagogy, and see how this can have a bearing on Ethics and Codes of Conduct in science in general. Such ethics and codes of conduct are currently patchy at best, and must be consolidated and reinforced, and must emphasize a scholar’s duty towards science, society and the education system, all from a global, multi-cultural perspective, and not just a narrow, Eurocentric one. Such approaches are likely to raise eyebrows and face stiff resistance from vested interests and cabals around the world but these need to be encountered and gradually surmounted in the wider interest of scholarship and science. This renewed emphasis also becomes necessary because most academicians hold well-paid positions, and in such a case, definitions of social responsibilities must be preferably driven by university mandates and standards, beside additional requirements for different disciplines and geographical region. Needless to say, movements emphasizing social duties must be extended to all fields of the social sciences where they are currently mostly ill-defined, besides the physical sciences, and must become one of the more important movements of the Twenty-first century as old-school scholars and thinking are marginalized and made irrelevant. We must gird our loins and bring the difficult to fruition by overcoming all challenges and vested interests that may come our way. At the same time, those who stress unbridled academic freedom may still require a patient hearing to capture all aspects of the debate, but must be apprised of the limitations of their approaches.¹²³⁴

¹ *Historiography by Objectives: A new approach for the study of history within the framework of the proposed Twenty-First Century School of Historiography* Sujay Rao Mandavilli ELK Asia Pacific Journal of Social Sciences Vol 1, Issue 2 (2015)

² *Enunciating the Core principles of Twenty-first Century Historiography: Some additional extrapolations and inferences from our studies and observations on Historiography* Sujay Rao Mandavilli ELK Asia Pacific Journal of Social Science (ISSN: 2394-9392) in Volume 2, Issue 4 July to September 201

³ *Introducing Anthropological Historiography as an integral component of Twenty-first Century Historiography: The role played by Anthropological Historiography in the attainment of long-term Anthropological goals and objectives* International Journal of Innovative Science and Research Technology, February 2018, Volume 3, Issue 2 Sujay Rao Mandavilli

⁴ *Unleashing the potential of the ‘Sociology of Science’: Capitalizing on the power of science to usher in social, cultural and intellectual revolutions across the world, and lay the foundations of twenty-first century pedagogy* Sujay Rao Mandavilli ELK Asia Pacific Journal of Social Sciences, 2021

What is academic freedom?

Academic Freedom as we see and understand it is a double-edged sword, often highly beneficial to science but sometimes fraught with unintended consequences, and in extreme cases, can be calamitous and ruinous to science too, if not applied properly. It is largely a boon to academia, science and society but can also be misused to a large extent. Academic freedom is a concept expressing the belief that the freedom of inquiry by researchers (and unfettered research and teaching) is essential to the healthy, all-round progress of science, and that scholars should have freedom to develop, teach or communicate ideas without the fear of repression or backlash. This position also argues among other things, the freedom of researchers to choose topics of research, and set the tempo and direction of research. This concept often extends to safeguards on scholars' speech outside an academic context so as to impart on it a broad connotation. Ideas and praxis pertaining to freedom of speech vary from country to country and context to context. In most countries however, professors are advised not to make controversial remarks outside their subject, and can even be fired for inappropriate behaviour. This approach is often misappropriated in the sense that scholars with ideological overtones or reckless dispositions (Examples being Eurocentrists, Indocentrists and Marxist historians) can often take refuge in it, bypassing all other duties and responsibilities that can be reasonably expected from them.

In the early universities of Europe, concepts pertaining to Academic freedom and social responsibility were not codified, and there was a great diversity in approaches pertaining to inquiry and research. During such periods religious censorship and diktat was all-powerful, and receded only with the Enlightenment and the Renaissance, and the movement of Martin Luther. Thus, the concept of Academic freedom can be traced back meaningfully only to the universities of Medieval Europe, they were further refined during the time of the Philosopher and Linguist Wilhelm von Humbolt when the university he founded adhered the principles of academic freedom in both research and teaching, thus providing a model for other Western universities. Other universities such as the University of Gottingen, and the University of Leiden also provided academic freedom to a considerable degree. The idea of free speech in academia is however somewhat older. In 1811, the German philosopher Johann Gottlieb Fichte had spoken about freedom in academic investigation, and the idea of academic freedom got a boost with the Prussian reform and the Humboldtian university. In Germany, academic freedom was known as Akademische Freiheit and comprised the freedom to learn (Lernfreiheit) and the freedom to teach (Lehrfreiheit). Professor Friedrich Paulsen of the University of Berlin famously stated, "For the academic teacher and his hearers there can be no prescribed and no proscribed thoughts. There is only one rule for instruction: to justify the truth of one's teaching by reason and the facts." Even though Germany proved to be the torchbearer in Academic Freedom, its reputation took a severe beating during Nazi Germany, when many German universities were forced to teach Nazi ideology. In other parts of the world like the Soviet Union, science was strictly regulated by government agencies, and entire subjects of study like Sociology banned. This concept was echoed in the writings of Marxist John Desmond Bernal, who published *The Social Function of Science* in 1939, and differed with Michael Polanyi, John Baker and others who preferred a liberal approach to science. The latter two founded the "Society for Freedom in Science", and authored a series of articles such as "The Contempt of Freedom" (1940) and "The Logic of Liberty" (1951), in which they emphasized free enquiry over service to society. This would include researchers and scholars choosing their own problems, and attempting to solve them to the best of their judgement, besides communicating their

ideas to a wider audience without fear of vilification or censure. Academic freedom as a right of faculty members is followed today in many countries.

In the United States, for example, (where universities are governed by independent governing boards) the constitutional protection of academic freedom can be traced to the guarantee of free speech under the First Amendment of the constitution. In the United States, academic freedom is also defined by the Declaration of Principles on Academic Freedom and Academic Tenure by the American Association of University Professors or AAUP in 1915 and "1940 Statement of Principles on Academic Freedom and Tenure", and is authored by the American Association of University Professors and the Association of American Colleges. The American Association of University Professors in its 1940 Statement of Principles of Academic Freedom and Tenure defined academic freedom as "full freedom in research" and "freedom in the classroom in discussing their subject." Thus, even though the USA lagged behind Germany in early years when its universities were mere institutes of teaching, Academic freedom in American Universities came of age in the Twentieth century, when American Universities came to be highly regarded and respected all over the world.

Similarly, the German Constitution grants academic freedom, and "Art and science, research and teaching are free, even though Universities there tend to be more government controlled here than in the United States. From the 1980s there has been an increasing debate about the role of academic freedom in university life, and what academic freedom encompasses or entails (Tight, 1988a; Slaughter & Leslie, 1995), amidst fear that academic freedom is becoming stifled or compromised. There are other institutions promoting academic freedom. For example, AFAF (Academics For Academic Freedom) of the United Kingdom, is a platform for researchers who believe in free enquiry and free expression, and a communication of their ideas to a wider public besides putting their ideas to wider scrutiny and debate. In France, Academic Freedom is constitutionally protected, and Academic Freedom is also highly cherished in Scandinavian countries. Sociologist Ruth Pearce strongly argued that the concept of academic freedom existed to protect scholarship from censure by the state or by religious authorities in many societies. Academic freedom was also upheld by the courts as exemplified by several judgments such as *Sweezy versus state of New Hampshire*. Today, academic freedom is considered to be a *sine qua non* for the functioning of modern universities, and is reinforced by several conventions. For example, the Charter of Fundamental Rights of the European Union of 2009, guarantees academic freedom. The freedoms of thought and speech are also implied in other conventions such as the European Convention on Human Rights. Article 13 of the Charter of Fundamental Freedoms of the European Union, 2000 deals with Freedom of the arts and sciences while Article 10 of the European Convention for the Protection of Human Rights and Fundamental Freedoms, 1948 deals with Freedom of expression. The UNESCO Recommendation concerning the Status of Higher Education Teaching Personnel of 1997 also emphasizes the importance of academic freedom in achieving quality of education, and technological progress through several criteria. On the other hand, Academic Freedom is highly restricted in countries such as Saudi Arabia, Cuba and Iran where ideology and religious diktat reign supreme. In countries such as India and China, the principles of Academic Freedom remain ill-defined.

However, there are limitations on academic freedom- intellectual honesty, or a quest for the truth must be valued at all times, and must reign supreme at all costs. Debates could be engaged in, but should be meaningful, constructive, and should not be trampled on the rights and opinions of others. The statement dealing with freedom by the AAUP therefore, states that teachers should know their bounds and limitations and "should be careful not to introduce into their teaching controversial

matter which has no relation to their subject.” Keeping these principles in mind, professors were often fired for inappropriate behaviour. Academicians also play a vital role in the building of a scientific temper, and in nation building. In some cases, Academic freedom is associated with controversies such as the desire to teach creationism in schools, and undermine evolution. It may also lead to the promotion of other forms of pseudo-science, undermining a scientific temper. Keeping these factors in mind, Albert Einstein and Jerry A. Coyne have cautioned on the dangers of unbridled academic freedom. In the 1950s during the era of McCarthyism, there was considerable public debate on Communism's role in academic freedom, and many articles and books were published. Those who were thought to be Communist sympathizers were likewise fired. Communist supporters and sympathizers argued that this itself constituted a confront and an attack on academic freedom. Thus, the issues revolving around academic freedom are complex and multi-faceted indeed. 567

Misuse of Academic Freedom is often due to Careerism. Careerism may be defined as the policy or practice of advancing one's career or self-interest at the cost of one's integrity and service to science or society. At times it may also stem from extreme rivalry or competition in scientific endeavour between scientists or teams. It is a warped intellectualism or self-interest masquerading as intellectualism. Thus, careerism often compromises unbiased research, honest inquiry and dissemination of truth to their students or to society. While some amount of careerism is natural, it must not conflict with his discharge of duties towards society. Careerism has been widely criticized by a range of thinkers starting from Socrates in ancient Greece to Russell Jacoby in the modern era but is unfortunately widely followed and practised to this day. A more extreme form of abuse is professional abuse where codes of ethics and codes of conduct are not respected, standards of behavior transgressed.

Definition of careerism

According to the Mariam Webster dictionary, careerism may be defined as the policy or practice of advancing one's career or pursuing professional advancement often at the cost of one's integrity. It usually stems from a desire to make more money or achieve a promotion. It also stems from the fact that career denotes prestige and power. It may also be defined as the overwhelming urge or desire to advance one's own career or social status, at the expense of social responsibility, or ethics (or simply not discharging professional duties and responsibilities or responsibilities towards science). Careerism may also be defined as the propensity or tendency to pursue career advancement, power, and prestige outside of work performance, or areas of operation, often reducing operational efficiency in those areas. A careerist is therefore someone who thinks their career is more important than all other considerations, such as objectivity and integrity, and who will do anything to be successful in it.

Cultural factors may also influence a careerist's perspective towards their occupational goals as some cultures may hold their careers in higher esteem than others, though this is only a broad

⁵ Understanding Academic Freedom, Henry Reichman · 2021

⁶ Margrit Seckelmann, Lorenza Violini, Cristina Fraenkel-Haeberle · 2021

generalization. There may be exceptions for every rule. According to Schein, there are three important aspects of cultural environments and careerism, namely how culture can influence various concepts pertaining to careerism, how culture can influence the importance of a career relative to personal, family and other matters, and lastly how culture can influence the bases of marginal careers. Cultures cannot be de-hyphenated from other related or attendant ideologies too. For example, western scholars tend to be Eurocentric in their orientation while Indian scholars tend to be Indocentric reflecting their natural penchants. In best case scenarios they may produce their output for narrow scholarly audiences. Hindutva scholars in India have always desired to boost sectarian pride, while Marxists have clung on to outdated approaches. Cultural proclivities have often led to undesirable sciences such as Eugenics first proposed by Francis Galton in the nineteenth century, and brought into fruition during the Third Reich. These inherent biases are often coupled with careerism and intense rivalry to multiply the bias manifold, often with disastrous consequences or results for scientific activity. This observation should also serve to rekindle interest in our oft-repeated argument of the "Globalization of science" for all of mankind. On the other hand, people should choose to become scholars ideally because of a genuine interest in scholarship and science, a fascination with underlying questions and unresolved issues pertaining to the field. This principle should hold good in a vast majority of cases, if not always. A desire to opt for science may also stem from the downstream implications of the work and a genuine resolve to do some good to society. However idealistic this may seem the careerist component should be whittled down to a manageable level, and a scholar should primarily focus on service to science and society. If it crosses a broad threshold of acceptance, true science cannot ever result in spite of rigour, methodology or talent. Careerism may even boomerang badly on the careerist in the long-term, rendering him naturally obsolete, or making him a misfit among a larger network of scientists besides yielding a scientific output of a low quality, and work that is shallow and lacking in genuineness. Examples from Indology are the hackneyed tussle between Michael Witzel and Asko Parpola in Indology around a decade and a half ago. They had proposed the Paramunda Indus based on Eurocentrism or Nineteenth century German vested interests and Dravidian Indus hypotheses based on obsolete paradigms respectively, both of which are not as such tenable. Such approaches, proclivities and tendencies produce science of a very low quality besides impeding the growth of science in the long-term, and throwing up counterreactions. Extreme cases have resulted in malfeasance, misrepresentation, fraud or falsification as demonstrated by the late NS Rajaram's "Horseplay in Harappa" scandal as it was based on a blind allegiance to the Hindutva ideology, if not careerism. Also in the Indian context, Christian Missionaries like J. Wilson and John Muir had also much earlier supported the idea that South Asian aborigines were indigenous to the region and that upper castes were interlopers either migrating into or invading the sub-continent, thereby reflecting a Eurocentric ideology (Leopold 1974:596-7). "Ages and ages ago, there sat, side by side, the ancestors of the English, Rajputs and Brahmins. Now after ages", British Prime Minister Stanley Baldwin said in his speech to the House of Commons way back in the year 1929, "the two branches of the Aryan ancestry have again been brought together by Providence" By establishing British rule in India, God said to the British, 'I have brought you and the Indians together after a very long separation ... it is now your sacred duty to raise them (The Indians) to your own level as quickly as possible brothers that you are'! [Baldwin, 1929] Likewise, Thomas Babington Macaulay asserted that Indian knowledge was inferior and miniscule compared to western knowledge, and the whole of Indian knowledge could not even fit a bookshelf in a Western library. The idea that the original natives of the region were aborigines alone also finds some support in the writings of the Indian Dalit writer Jyothiba Phule, who, opposed the power of Brahmins, and preferred extreme

variants of the Aryan Invasion Theory to prove his point. At the other end of the spectrum, Afrocentrists like Clyde Winters claim that most civilizations were built by the Africans, and the implications of this ideology spill over to Indic studies too, as theories on the identity of the Harappans were proposed accordingly. We would baldly refer to ideologies of various hues and colours even if somewhat provocatively, as the enemies of science, society and the education system, and this categorization or indictment should even apply to more mainstream approaches such as Marxist historiography to the extent it is anti-truth. Such ideologies also multiply the intellectual distances between scholars, and lead to enhanced careerism in their own way. Needless to say, in all such cases, the absence of social commitment or responsibility is extremely evident.

In other cases, scholars have had to relinquish their degrees or have their articles withdrawn due to a penchant for bias or self-glorification. Milder versions however, involve only exaggeration, sugar-coating, cherry-picking, selective amnesia or propensity to push a point of view however untenable it may be. Some scientists use mumbo-jumbo and excessive jargon to confound their critics. Even notable scientists such as Newton, Ptolemy and Dalton have succumbed to this approach. All these approaches also seem to contradict in varying degrees with the tenth century philosopher Ibn al-Haytham's statement, "Truth must be sought for its own sake. And those who are engaged upon the quest for anything for its own sake may not be interested in other things."⁸ A position endorsing careerism has also been criticized from ancient times by thinkers such as the Greek Socrates (in his famed criticism of the sophists), the German philosopher Arthur Schopenhauer (in his criticism of university philosophy), the French philosopher Julien Benda (treason of the intellectuals), the physicist Albert Einstein (criticism of an academic career), and the American professor of history Russell Jacoby's criticism of academic careers besides others. Therefore, while overarching frameworks antithetical to scientific endeavours and pursuits such as the hegemony of the Church have largely receded, ideologies and self-interest remain as well-entrenched as before in the Twenty-first century, and these still tend to compromise a dispassionate pursuit of the truth, by making it elastic, variable or one-sided. Needless to say, these ideologies go hand in hand with careerism. Such ideologies must be attacked headlong and castigated, and we must spearhead one of the greatest movements of the Twenty-first century to this effect. This is easier said than done, as pre-scientific ideas and ideals pervade many cultures to this day, and counter-ideologies can be no solution. Multi-cultural teams must be constituted, and team members must reason things out with each other. The important question is who must take the initiative. There are no easy answers to such questions

Other examples of careerism in science

Several other examples of careerism in various fields of science, particularly the social sciences spring readily to mind, and have often manifested themselves to an extreme degree, but we will emphasize those pertaining to various fields in the social sciences and allied fields only. Adherents of different hypotheses often cling on to their hypothesis rather doggedly with little meaningful interaction or cross-synthesis of date. A few such examples of bitter and raging controversies in science are presented below:

Indo-European migrations, Indo-European studies and Indology

⁸ Ethical issues in scientific research: An Anthology Edited by Edward Erwin et al, Routledge, 2015

The Kurgan hypothesis which is also sometimes known as the Kurgan theory or the Steppe PIE origin theory is the most popular and widely accepted theory to explain the Indo-Europeanization of the world which locates the Proto-Indo-European homeland in the steppes (a region associated with the Kurgan or burial mound culture) from which the Indo-European languages are postulated to have spread out to Europe, South Asia and Iran. The Steppe theory was first proposed by Otto Schrader in 1883 and V. Gordon Childe in 1926, then further refined by the Lithuanian American Archaeologist and Anthropologist Marija Gimbutas, in the 1950's, and is now supported by scholars such as the American Indo-Europeanist JP Mallory. On the other hand, this seems to be a bone of contention between JP Mallory and the British archaeologist Colin Renfrew who supports the less likely Anatolian model or Sedentary Farmer theory. Any scholar doggedly and dogmatically pursuing his own line of thought contrary to other evidence, would only serve to weaken his own position in the long run.

On the other hand, the "Out of India theory" or the OIT, sometimes also known as the "Indian Urheimat theory," or the "Indian homeland theory" is the idea that the Indo-European language family originated in Northern India and spread to Europe and other parts of Asia through migrations. This is sometimes associated with Indigenous Indian Aryanism or the IAT, but has no backing in mainstream academics, as such ideas were abandoned a long time ago as unfeasible and untenable given that Sanskrit was never widely used outside India in ancient times and also because, India is not widely accepted as a region where horse domestication first began. Proponents of this theory often cling on to it tenaciously, ignoring other contradictory evidence. Such theories are now associated with the religio-nationalist Hindutva school which advocates Hindu supremacy. Such ideas are also often combined with careerism. For example, Yellapragada Sudershan Rao was appointed head of the Indian Council of Historical Research. He is also president of the Sangh Parivar-affiliated "Bharateeya Itihaasa Sankalana" Samithi, an organisation that aims to rewrite history from a Hindu nationalist perspective. He is only one among various scholars famously at work to rewrite history from a nationalist perspective, and Witzel refers to it as a "cottage industry". At the other end of the spectrum, the mid-nineteenth century school of Indology is an assemblage of obsolete ideas pertaining to Indian history dating back to the mid-nineteenth century and clashing headlong with Hindutva notions of history. Groups promoting such ideas are often strange bedfellows with Marxist historians just as Western and Indian Hindutvavaadins are strange bedfellows.^{9 10}

Out of Africa theory versus Multi-regional hypothesis

The Out of Africa hypothesis or theory (OOT or OAT) or Recent out of Africa hypothesis or theory is a model proposing the origin and dispersal of homo sapiens or modern humans out of Africa in relatively recent times. The hypothesis states that humans evolved usually in the Eastern part of Africa, populating the rest of the world from around. 70,000 years ago, and replacing, archaic hominins that were found outside Africa during that period or admixing with them. This hypothesis is also often alternatively known as recent single-origin hypothesis or RSOH, replacement hypothesis, or recent African origin model or RAO. Earlier expansions of Homo erectus and Homo Neanderthalensis are also sometimes postulated. Homo sapiens are sometimes postulated to have originated in the horn of Africa some 200000 or 300000 years ago. Reasons for such large-scale and widespread migrations are

⁹ Anthony, David W. (26 July 2010). *The horse, the wheel, and language: how Bronze-Age riders from the Eurasian steppes shaped the modern world*. Princeton, N.J.

¹⁰ Mallory, J. P.; Adams, Douglas Q. (1997). *Encyclopedia of Indo-European culture*. Taylor & Francis. pp. 4 and 6 (Afanasevo), 13 and 16 (Anatolia), 243 (Greece), 127–128 (Corded Ware), and 653 (Yamna)

sometimes furnished, but are seldom convincing. The causes for anatomical differences between humans around the world are also seldom convincingly explained as genetic data would account for wide variations in humans around the world along with different types of interbreeding. Routes for migration into Europe, Asia and eventually into the new world have also been proposed, sometimes conjecturally. Some other scholars postulate that migrations took place in waves starting 270000 years ago, and dying out entirely 70000 YBP. As such, there are different variants of the Out of Africa theory, and no one version has widespread acceptance. This theory which may be somewhat unlikely, is sometimes associated with scientific anti-racism.

The multiregional hypothesis, first proposed in 1984 by Milford Wolpoff and others, and subsequently revised with many variants, is another model which seeks to provide an alternative explanation to the more popular "Out of Africa" model of evolution. According to this hypothesis, hominins arose around two million years ago in different parts of the world either simultaneously or at different periods in time, and subsequent human interbreeding took place to result a single, continuous human species. This model also gives a pride of place to Africa. This model states that all archaic species such as Homo erectus and Neanderthals evolved in different parts of the world to result in the diverse populations of anatomically modern humans or Homo sapiens.. Thus, this model accounts for regional differences in anatomical features more convincingly. Most models propose some gene flow, although this varies from model to model. This model is different from pure polygeny which states that humans evolved completely independently in different parts of the world with no gene flow among populations. The latter is known as parallel evolution.^{11 12}

Race and intelligence

Other disputes in science have included the race versus intelligence controversy which is shallow because there may be no such thing such as race, only a continuous gradation in anatomical features, some reflecting an adaptation to the environment. Also, it may be difficult to define race satisfactorily because differences in IQ scores may be due to social and cultural factors rather than genetic ones. Such data has often been used to promote scientific racism. Attempts have also been made to controversially rank nations on the basis of IQ. A minority of scholars such as William Schokley and Arthur Jensen also have proposed that unknown genetic factors are responsible for differences in IQ scores. Howard W. Odum, Lewis Terman, Arthur Jensen and other sociologists have pointed out to the differences in temperament between various ethnic groups, and some psychologists like Raymond Cattell have opposed inter-racial marriages, and segregation was legislated in some countries. In extreme cases, a nexus between skin pigmentation and IQ has also been proposed or a nexus between IQ, race and fertility. Sometimes a study of cranial sizes and shapes, response times to stimuli and intellectual achievements of different ethnic groups have been used to add fuel to the debate, and promote racism or sometimes anti-racism. Some of these differences can be explained by the concepts of "mind-orientation" and "cultural or societal orientation" of different socio-cultural groups (overlapping with ethnic groups) as explained in our previous papers or to factors forming a part of our paper on "the sociology of science". They can also be attributed to a reflex action in certain cases owing to racism or apartheid (or discrimination and prejudice) where victims choose less intellectual

¹¹ Groucutt HS, Petraglia MD, Bailey G, Scerri EM, Parton A, Clark-Balzan L, et al. (2015). "Rethinking the dispersal of Homo sapiens out of Africa". *Evolutionary Anthropology*. **24** (4)

¹² Finlayson C (2009). *The humans who went extinct: why Neanderthals died out and we survived*. Oxford University Press US

pursuits often requiring a lower level of education. This explanation is much more likely, as evidenced by the fact that black American children raised by white parents have done relatively better in IQ tests; the position of the equality of the mental capacity of various ethnic groups has been staunchly defended by sociologist W.E.B Du Bois, and others. Others such as Robert Woodworth have warned against jumping to conclusions, and waiting for more reliable evidence to manifest itself; we would endorse this view, too. The Flynn effect, on the other hand suggests increase in IQ scores over time due to environmental factors. Asians even if they are the cream of the cream, are doing particularly well in the USA in Maths and in science. In our view, research on such controversial topics would rest on four fundamental pillars (a) Overall good to science (b) No personal bias or prejudice or any form of careerism (c) All other possibilities have been completely ruled out (d) Robust scientific methodology must be adopted based on reliable and complete data. Anything less would be completely unacceptable. McKeen Cattell, the Vice President of the American Association for the Advancement of Science was extremely skeptical about the ability of non-whites to produce good scientists; even the American Biologist and Geologist Louis Agassiz thought non-whites to be unfit for scientific work, and Francis Bernier proposed a hierarchy of people based on skin colour. Thomas Babington Macaulay, a historian and colonial administrator in India, who famously argued in 1835 that "a single shelf of a good European library was worth the whole native literature of India and Arabia" Likewise, James Watson, the co-discoverer of the DNA double helix, proposed that Black people are less intelligent than white people. The psychologist Richard Herrnstein and the political scientist Charles Murray also claimed that genetics was the main determinant of intelligence, and that those genetics led to African Americans and European Americans having different IQ scores. Arthur de Gobineau argued that only whites could build great civilizations, and the history of non-whites was non-existent. All this may however only be partly true, and applicable to the situation in the USA then. Ancient China had its own golden age in science during the Ming dynasty, and even invented gunpowder, printing, the compass and paper. The achievements of the Medieval Arabs in Mathematics and Chemistry is no less impressive, as they had their own golden age from circa 750 AD to 1250 AD. None of the Old World Civilization were white, and much of the scientific research in the Twenty-first century is carried out in Asia.^{13 14 15}

Disputes in linguistics

Theories such as the bow-wow theory, the pooh-pooh theory, the ding-dong theory, the yo-he-yo theory, the ta-ta theory, the ma-ma theory, the hey-you theory and the la-la theory have been proposed to explain the origin of language but these are mutually exclusive and based mostly on quaint Nineteenth century intellectualism. We had proposed an alternative theory and this was known as the epochal polygenesis approach. Likewise, in historical linguistics, there is a dispute between the tree model or the cladistic model and the wave model the first of which was formulated by the German linguist August Schleicher and the second of which was formulated by Johannes Schmidt. Other major disputes pervade to this day, examples being the location of the IE homeland. J P Mallory and Colin

¹³ Nisbett, Richard E.; Aronson, Joshua; Blair, Clancy; Dickens, William; Flynn, James; Halpern, Diane F.; Turkheimer, Eric (2012). "Intelligence: New findings and theoretical developments". *American Psychologist*. **67** (2): 130–159

¹⁴ Gardner, Howard; Hatch, Thomas (1989). "Educational Implications of the Theory of Multiple Intelligences". *Educational Researcher*. **18** (8): 4–10.

¹⁵ Fagan, Joseph F; Holland, Cynthia R (2002). "Equal opportunity and racial differences in IQ". *Intelligence*. **30** (4): 361–387

Renfrew have locked horns on the location of the IE homeland, while Indian nationalist writers have largely supported an autochthonous model.¹⁶

Factors impacting careerism in science

We will now discuss and analyse factors impacting careerism in science threadbare or allied to careerism or bad science.

Ideology and science

An ideology may be defined as a set of theoretical or practical beliefs or ideas usually derived from the philosophies of a person or organization, and formulated due to reasons that are not completely logical or rational. Such ideologies may be religious, political, economic, social or cultural. The term ideology originates from the French word “ideologie”, which itself derives from the Greek words “idea” or idea and “logía” which means 'the study of'. The term ideology was however coined only in 1796 by Antoine Destutt de Tracy as “a science of ideas”, and it has had both positive and negative connotations ever since. It is usually considered to be coherent or logical with some internal consistency, though at times, it may be illogical or flawed. Many different scholars such as David W. Minar, Christian Ducker, Louis Althusser, Terry Eagleton and Willard A. Mullins have described different ways the word *ideology* is used. According to them, Ideology is usually used to refer to a collection of a type of ideas with an inherent logical structure, and providing some guidance towards action. However, scientists often claim that the entire process of conducting scientific research and constructing scientific knowledge is not based on any ideology and is therefore, value-free and non-ideological i.e. it is not based on personal biases and values. Scientific research is therefore geared towards uncovering the truth, and the underlying laws of nature and the universe. Such statements cannot be taken at face value, given that vested interest and ulterior motives often drive most scientific activity. According to Thomas Khun, scientific research is swayed by dominant paradigms which may comprise a set of assumptions about a given topic. Thus, there is an implicit bias in scientific research because results that do not fit in with pre-conceived notions are often ignored. According to Bruno Latour and others, the field of scientific research is also often influenced by those who fund the research. Likewise, research which does not fit into their norms is suppressed. Often, the dominant scientific world view may also marginalise or eclipse other non-scientific world views. Thus, western paradigms or paradigms birthed in the context of western cultures may often override other ones. Such constructs are particularly true in the social sciences, where constructs were based on observations based in Europe, and other cultures were objects of ridicule and derision. Such biases can be overcome by gathering non-western or marginalized points of view often through social science research. Techniques in social sciences such as Ethnography, the participant observation method, interviews and questionnaires may be used, and scientists of various hues and colours may be apprised of social science techniques. This must be done across cultures; therefore, scholars must stand in service of mankind as a whole, not in service of narrow Western cultures alone. Likewise, science must become a multi-polar affair, and this alone will produce emic perspectives of different topics, and neutralize bias. Other scholars have often targeted their works towards a narrow western audience given that such societies have possessed a greater scientific appetite. Examples of such

¹⁶ On the origin and spread of languages: Propositioning Twenty-first century axioms on the evolution and spread of languages with concomitant views on language dynamics Sujay Rao Mandavilli ELK Asia Pacific Journal of Social Science Volume 3, Number 1 (2016)

authors have included Richard Dawkins and Stephen Hawkins. At the same time, flaws of non-western cultures cannot be overlooked. For example, the Biblical theory of creation is substituted by other creation myths in many other cultures. Thus, cultural remediation must also be multi-polar, and different techniques must be developed accordingly for different cultures. Anything less will produce inferior or low-quality science. Thus, social responsibility must be understood in terms of different cultures, their pre-scientific beliefs, their societal and cultural orientations as well as the mindspace, thoughtworlds, worldviews and mind-orientations of their constituent populations. This approach alone will create eureka points and mini eureka points and bring about intellectual revolutions. These approaches alone will be compatible with the principles of the 'sociology of science'. These will be among the fundamental social duties and responsibilities of a researcher.¹⁷

Objectivity

Objectivity may be defined as the quality or character of being objective. It may be defined as the lack of favoritism toward one party or another in a debate or conflict based on internal or external influences. It provides an accurate depiction of reality and gets us closer to the truth. It may also be defined as freedom from perceptions and biases. It also emanates from constructs being based on facts, and empirical evidence and not influenced by personal beliefs or feelings stemming from one's environment or upbringing. In philosophy, objectivity is defined as truth independent of bias caused by individual subjectivity based on one's perception, beliefs, (stemming from racial or cultural backgrounds) emotions, or imagination. Such perceptions and beliefs may often be irrational. What is more important and must be stressed and underlined is that objectivity in the moral framework calls for morals based on the well-being of the people in society and of society as a whole. In the modern epoch such ideals must be indeed globalized to reflect global well-being.

The terms "objectivity" and "subjectivity," are typically understood in terms of a person and an object. In case of objectivity, the object exists completely independent and unaffected by the subject's perception of it. Thus, objectivity is associated with ideas such as truth, reality, and reliability, and absence of judgment or emotion. While objectivity leads to uncovering of the truth, subjectivity can lead to errors of commission. Knowledge is also sometimes classified into objective and subjective knowledge. Subjective knowledge is typically much more weak than objective knowledge, and may vary from person to person. Every scholar or researcher would be expected to be as objective as possible and keep his subjectivity to a bare minimum. Scientific objectivity is one of the hallmarks and pillars of science. It also states that scientific claims, methods, results (and scientists) should not be, influenced by perspectives, emotions, judgments, biases, prejudices, personal interests, among other factors. Objectivity is an ideal for scientific inquiry, and forms the basis of the authority of science in society, and the ability to edge out pre-scientific values and beliefs. This must extend to all fields of the social sciences such as Historiography where objectivity has proven elusive. A social scientist must rise above his own limited vision and perspective, and try to perceive the needs of society. This, he must do from a globalized, and a culture neutral perspective. To do this, objectivization and quantification techniques may be used, and a researcher must rise above petty interests and

¹⁷ The relevance of Culture and Personality Studies, National Character Studies, Cultural Determinism and Cultural Diffusion in Twenty-first Century Anthropology: As assessment of their compatibility with Symbiotic models of Socio-cultural change ELK Asia Pacific Journal of Social Science Volume 4, Issue 2, 2018 Sujay Rao Mandavilli

careerism espousing academic freedom only to the extent that it is compatible with social or group interest.

Science and Pseudo-Science

The term pseudo-science derives from the Latin term pseudoscientia and can be traced to the Seventeenth century. The American sociologist Robert K. Merton proposed five norms which characterize true science. These were originality, detachment, universality, Scepticism and public accessibility. If any of the norms were not adhered to, Merton considered the work to be nonscience. Karl Popper's distinction between science and pseudo-science which he also labelled ideology is based on the principle of falsification. This principle states that if a theory is open to being disproved or falsified by other facts, then can be considered to be scientific. Any theory which cannot be falsified is pseudo-science. Pseudoscience typically comprises statements, practices and beliefs, that claim to be scientific and factual but do not adhere to any scientific method. Pseudoscience is characterized by exaggerated or unfalsifiable claims; dependance on confirmation bias rather than rigorous attempts at refutation; absence of openness to evaluation by other researchers; absence of systematic approaches in developing hypotheses; etc. Pseudo-science often masquerades as science, and thus attempts to mislead the public. Examples of pseudoscience include Astrology and Palmistry, as such disciplines are based on false premises, or lack rigour.

The word "Ideology" can be traced to the French word "idéologie" which was introduced by a philosopher, named A.-L.-C. Destutt de Tracy, as a short name for what he called his "science of ideas". Various other definitions of ideology have been provided by David W. Minar, Willard A. Mullins and Terry Eagleton. In sum, an ideology may be referred to a collection of beliefs that are usually not fully tested or lack universal applicability. These ideas or beliefs may be rigid and non-changing. Such ideologies may seek to influence individuals in unnatural ways. They may also comprise the ideas of an ethnic group or class, and may lack universal applicability. Examples of ideologies in science include Eurocentrism, which is sometimes based on European exceptionalism, Sinocentrism, Afrocentrism and Indocentrism which seeks to draw evidence from Puranic literature that India was the mother of all civilizations. Eurocentrism is tied to racism (Examples being Charles Benedict Davenport and Glayde Whitney who opposed inter-racial marriage, and John Philippe Rushton who argued for differences in IQ between races. Most modern scholars however argue that races are illusory, and there are subtle changes to morphological features, clines and "ecotypes" based on geography, as proposed by Julian Huxley and others.) and colonialism, but anti-racism as a reaction to racism is not uncommon in science either. We must also stand vigil against hypernationalism which may produce erroneous results. These ideologies may be consciously or subconsciously adopted (often due to a conscious desire to boost nationalistic pride or due to a lack of awareness of other cultures), and may lead to bad or poor quality science. These may be subverted by acknowledging social duties of a researcher, and using them as a guiding beacon of light. For example, scientists may bear in mind global environmental issues while developing new technologies, and may eschew technologies that are environmentally harmful. Understanding the social duties of a researcher can also lead to more focussed scientific activity and eliminate frivolous endeavour. Scientists, scholars and researchers must also vie with each other to become role models for other scientists. A role model is a person whose behaviour, or approach is or can be emulated by others, especially by younger people. This would lead to higher quality science in general, and have a ripple effect. Higher quality science can be achieved by winning the trust, hearts and minds of denizens of different parts of the world. Thus, paradigms must make sense to people from Johannesburg to Jakarta, from London to Lahore, and Hyderabad to Helsinki, and must reflect

their ideals. Research techniques, particularly social science research techniques (These can be central or auxiliary to a given study; for examples, new theories in the non-social sciences can also be tested for social and cultural acceptance) must be applied to different cultures, and sampling done carefully and methodically

We have summarized these in our paper on the “sociology of science”, and to a lesser extent in the principles of “Anthropological pedagogy”. A readership of these two papers is highly recommended. The principles of the sociology of science and anthropological pedagogy seek to ensure that mainstream science is more widely accepted in different parts of the world edging out pre-scientific beliefs and inferior paradigms prevalent in different cultures. These principles are also tied to other fields of social sciences such as historiography which can ensure that a scientific mindset and worldview percolates the masses. These should also serve to guide the direction of research and guide in budget allocation among other aspects of scientific research. The principles of the “Sociology of Science” as delineated in our paper should serve as a benchmark for researchers, but these are primarily geared towards the social sciences. Other KRA’s (such as environmental friendliness, for example) can be defined for other sciences, and the final list of principles could be a subset or a superset of the principles we proposed, combining our principles with other principles. KRA’s must also be prepared for each department and for each scholar, ideally. Academic freedom must be attuned to such result areas. A higher degree of academic freedom must of course be provided, provided it is beneficial to science, but it must not violate our core principles therein stated. For example harmful and controversial sciences such as Eugenics must not be encouraged unless they are proven to have a nugget. We will stick to our stance, and combat positions advocating no-holds-barred academic freedom doggedly.

Poor quality science can also lead to self-reinforcing cognitive dissonance and can reinforce alternative hypothesis in the hearts and minds of the common man, and move them away from science. On the other hand, high quality science is based on the core principles of science which state that science is empirical, replicable, provisional, objective, systematic and morally appropriate. Poor science can also lead to its outright rejection in the hands of the laity and can also, as a consequence, lead to the unintended escalation of pre-scientific beliefs. Unfortunately, most scientific endeavour is still Eurocentric or is driven by personal agendas or rivalry (or bias against scientists from other nationalities or non-professionals or non-academics), and this compromises quality of research or leads to bad science. Bias is often attributed to the delayed acknowledgement of the works of Subramanya Chandrasekar and Yellapragada Subbarow. Much of the work of the latter was purported to have been destroyed by Cyrus Fiske out of sheer jealousy. Another example of such Eurocentric endeavour would be the Mid-Nineteenth century school of Indology. While it may have had its merits as it laid the foundations of Indo-European studies, it is deficient in that it examines issues from the point of view of antiquated Eurocentric frameworks. Likewise, Marxist historiography must be chastised to the extent it is anti-science. Such science also ensures that religious beliefs hold sway in different parts of the world, and the legitimacy of science is undermined in such regions. We would controversially and provocatively refer to such enterprise as poor quality science. Poor quality science is often based on careerism, if not limited perspectives, while on the other hand, high quality science eliminates careerism, or makes it irrelevant. Poor quality science is often based on and dictated by personal agendas and goals, and may be directly proportional to the existence of personal rivalry. For example, Kepler’s laws of planetary motion were ignored by Galileo and others, and the Copernican model took decades to establish itself. Galileo Galilei, and Giordano Bruno themselves strove to search for the truth but were persecuted by the Church. Likewise, the work of Austrian friar and monk Gregor

Mendel remained unappreciated until years after his death. His works were rediscovered by the Dutch Botanist Hugo de Vries, Austrian Agronomist Erich Von Tshermak and English Botanist William Bateson, and he is now considered the father of genetics. The Greek Astronomer Aristarchus of Samos along with Philaleus proved unluckier with their heliocentric theory, but their works were centuries ahead of their time. Such endeavours must be eliminated quickly, and vested interests crushed. Some scientific claims may even be qualified as non-science. As an instance, Paul Feyerabend's argues that voodoo is as legitimate a form of inquiry as particle physics and, even stronger, Likewise, Heidegger's argues that poetry gives us a deeper understanding of the world than science. Closely analysed, such views are no better than those of pseudo-science writers such as Erich Von Daniken, who proposed that extra-terrestrials visited earth from space in a bygone age. Such views also stem for the most part from a near total absence of social commitment. These constructs are not just pseudo-science, they are non-science. Poor quality science and careerism can impede or delay scientific progress by presenting false premises and paradigms. They can lead to lengthy detours, digressions and course-corrections also consequently delay the unmasking of the truth. (Sometimes by protracted periods!) Such aberrations can last decades or centuries, and the history of science will bear eloquent testimony to this. This is particularly true of the social sciences, where careerism, ideologies and myopic approaches are typically and traditionally high, and progress often resembles a merry-go-round or a carousel.^{18 19}

Social responsibility of scholars

Social responsibility is an ethical theory and framework according to which individuals must be held accountable for discharging their civic duties, and the actions of an individual must benefit the whole of society, and must be geared towards the discharge of such duties and responsibilities. This requires working in collaboration with other scholars and researchers (and organizations) meaningfully and for the benefit of mankind. This must be done throughout the knowledge creation process and should lead to better economics, protection of the environment, percolation of science and technology and human welfare, among other things. Positive implications of a scholar's work must be highlighted and promoted, while negative implications (both anticipated and unintended) such as damage to the environment must be avoided or eliminated. This must be handled carefully as the consequences or new technology or knowledge, including downstream applications may not be known in the beginning. Likewise, conflicting goals and objectives must be avoided. For example, some organizations may seek to maximize benefit to stakeholders, or sponsors rather than focus on societal goals. Many professional societies and organizations, examples being the National Academy of Sciences and the National Academy of Engineering of the USA, have developed ethical guidelines for the conduct of scientific research. Scientists and engineers, have a special responsibility with regards to the generation and use of scientific knowledge. Such responsibilities also extend to other parties such as the purveyors of knowledge, administrative bodies of research organizations, policy makers and funding organizations.

¹⁸ Introducing Anthropological Pedagogy as a Core Component of Twenty-first Century Anthropology: The Role of Anthropological Pedagogy in the fulfilment of Anthropological and Sociological objectives Sujay Rao Mandavilli International Journal of Innovative Science and Research Technology (IJISRT) Volume 3, Issue 7, 2018 (Summary published in Indian Education and Research Journal Volume 4 No 7, 2008)

¹⁹ Unleashing the potential of the 'Sociology of Science': Capitalizing on the power of science to usher in social, cultural and intellectual revolutions across the world, and lay the foundations of twenty-first century pedagogy Sujay Rao Mandavilli Elk Asia Pacific Journal of Social Science, October – December 2020

Sociology of Science

Science can play a major role in changing society for the better and bring about intellectual transformations; however, its potential to do so has mostly been unrealized and this may be due to the lack of conceptual clarity, and the absence of frameworks that can be applied across societies and cultures, besides a general disinterest on the part of eminent and influential scholars. Thus, stellar scientific achievements go hand in hand, and rather unfortunately so, with ignorance, blind faith, and superstition among large segments of the population.

Changes in society can be brought about by different streams sciences albeit in different ways; they are brought about not only through progress in the physical sciences and the percolation of technology, but also through better frameworks in the social sciences, all of which can have a ripple and a multiplier effect. Scientists also have a role to play in advising policymakers about the needs of society. Thus, they can play a role in prioritizing solutions, and decide funding requirements based on the service of science to society.

However, the number of researchers involved in studying science in relation to society is negligible, and there are no satisfactorily defined frameworks within and outside the education system or pedagogy. Therefore, clear frameworks must be formalized before they can be made operational. A commitment to link science to the various needs of society is also non-existent, but this is a pre-requisite for bringing about change. This is usually viewed as the job of social scientists, but social science remains steeped in narrow Eurocentric paradigms. Likewise, Science is only of peripheral interest to the layman, and this needs to be remediated.²⁰

There are however many emerging fields of study, which the potential to transform, the way science is taught and communicated to various segments of society. Science and technology studies or science, technology and society studies (commonly abbreviated to STS) is a bi-directional analysis of how society, culture and politics can affect scientific research and technological innovation, and how these, can affect society, culture and politics in turn. The sociology of scientific knowledge (or SSK in short) seeks to study science as a social activity, dealing with the social structures and conditions which give rise to science and effects of science on society including obliteration of pre-scientific thinking. It also studies the causes of scientific ignorance, and traces them to personal and cultural factors in turn. The sociology of scientific knowledge analyses the relationship between human thought and creativity and its social context and of the effects science and technology can

²⁰ THE IMPACT OF SCIENCE ON SOCIETY James Burke, Jules Bergman, Isaac Asimov, 1985

have on society. Scientific output or the lack of it is then traced to social, cultural, economic and historical factors, and a root cause analysis accordingly prepared. 21 22 23 24 25 26 27 28 29

We had also proposed a total of forty-six different principles in our paper on the 'Sociology of Science', which must be read and fully appreciated and we believe this can play a major role in helping the field reaching its full potential, and transforming the field of education, too. These include identifying pre-scientific and pseudo-scientific beliefs widespread in a society and using them as a starting point for remediation, trying to change individual mind-orientations and societal or cultural orientations to economically and scientifically more productive ones, time and space encapsulation (explaining the co-ordinates of time and space better to the masses), and use of pedagogically superior techniques for knowledge dissemination among other things.

Anthropological Pedagogy

Our paper on Anthropological Pedagogy which is also a highly recommended read and is tied to the sociology of science proposes the creation of Anthropological Pedagogy as a distinct field of study well within the framework of Anthropology, interfacing Anthropology and Pedagogy with several pre-defined principles and objectives, designed to promote Anthropological goals and objectives through the common medium of education. This proposed field of study is quite distinct from the traditional field of 'Educational psychology' which deals with the psychology of learning, and is also much broader in scope than the field 'The Anthropology of Education', and the relatively obscure field of Pedagogical Anthropology which was created by Maria Montessori and others. This sub-discipline is proposed with the hope that by combining the disciplines of Anthropology and Pedagogy, a platform can be created for the furtherance of human welfare and interests and the elimination of pseudo-scientific beliefs through better education systems.

Twenty-first century historiography

We had published a total of four papers on Twenty-first Century historiography, of which three form the core. The first known as Historiography by Objectives proposes a stakeholder driven and focussed approach to historiography and proposes thirty-nine core principles of historiography, to which more may be added by other scholars. These include those geared towards transparency, objectivity, rigour and scientific method in scholarship among other things. The second paper explores various core principles of historiography that must serve as a yardstick in scholarly endeavours, while the third

²¹ The Sociology of Scientific Knowledge: Studies of Contemporary Science Author(s): H. M. Collins Source: Annual Review of Sociology, Vol. 9 (1983), pp. 265-285 Published by: Annual Reviews

²² Constructing and Reconstructing Scientific Ignorance Ignorance Claims in Science and Journalism S. HOLLY STOCKING LISA W. HOLSTEIN Indiana University

²³ Religion and Science: Historical and contemporary issues, Ian G Barbour, HarperOne, 1997

²⁴ Yearley, Steve (2005), Making Sense of Science: Understanding the Social Study of Science (London: Sage)

²⁵ Sismondo, Sergio (2010), An Introduction to Science and Technology Studies (Oxford: Blackwell) 2nd Edition

²⁶ Bucchi, Massimiano (2002), Science in Society: An Introduction to Social Studies of Science (London: Routledge)

²⁷ David, Matthew (2005), Science in Society (Basingstoke: Palgrave)

²⁸ Scientific ignorance: Probing the limits of scientific research and knowledge production, Manuela Fernández Pinto, Universidad de los Andes

²⁹ The Tao of physics, Fritjof Capra, Third edition, Wildwood house, 1975

paper deals with Anthropological historiography and proposes forty-nine additional principles with a better integration with pre-historical and proto-historical periods. The core underlying theme of these papers is the role Historiography can play in societal transformation by edging out pre-scientific beliefs. These need to be carefully and properly understood and can serve societal needs very well indeed. Characteristics of an ideal historian would include Academic rigour (including thorough research and coverage of primary and secondary material), objectivity and quest for the truth, balance, Selection of topics (no bias in coverage of topics), and service to society.

We have argued that these aspects are not satisfactorily addressed by Marxist historiography, and Twenty-first century historiography as such seeks to replace Marxist historiography which we believe has paid scant attention to the discharge of social responsibilities particularly in the Indian context. Indian Marxist historians such as the late DN Jha and the late RS Sharma have rightly criticized Hindutva “historiography” and “Hindutva science” but do not appear to have understood the gamut of a historian’s duties towards society fully and completely. It must also be stated in this context, that while Statement on Standards of Professional Conduct have been proposed by the American Historical Association among others, delineating the duties of a historian towards society, there are no equivalents in countries such as India where objectivity remains for the most part, elusive. All this should indicate that there is a lot of work to be done indeed. There are several other issues to be tackled; for example, fields such as Indology, Indo-European studies, Indo-European linguistics, epigraphy and historical linguistics have traditionally been outside the field of historiography, but have been rampantly misused. As pointed out in a different section of this paper, codes of conduct in other fields such as Anthropology began rather late, and continue to be resisted. Cabals and vested interests are not so easy to override- for example, scholars can easily get away by arguing that academic freedom is supremely important, and all ideas have been encouraged. This neatly does the trick and cleverly keeps criticism at bay, but does not do justice to the idea of taking scholarship to a higher level or underline the importance of the eventual need for scholarly consensus on a gamut of issues enough. Several scholars such as E H Carr have accordingly argued that objectivity in History is impossible, and that history only reflects a scholars social and cultural milieu. They have also cleverly argued that historiography is distinct from other sciences, and that the requirements of other sciences do not apply. We have always argued that academic freedom camouflages ideologies, and personal preferences, and can be as highly preferred by knaves as it is preferred by researchers with noble intentions. This idea is central to our hypothesis, and is the underlying current beneath our arguments.

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Professional Ethics and Professional Conduct

The term Ethics which is derived from the Greek term “Ethos” may be defined as a set of moral obligations that seek to distinguish right from and wrong in all endeavours, and prescribe what humans ought to do. Ethics in science derives from a broader set of ethics that are in play in society in general particularly culture-neutral ones, and also to a large extent from philosophical ethics which delineates philosophical concepts of morality. Combining science with the principles of ethics forms the foundation and cornerstone of all responsible scientific activity. There must be an honest and conscientious attempt by individual scientists and the scientific community to act ethically and conduct themselves professionally, all in the interests of science and society. An overarching

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framework of ethics, however ill-defined or ambiguous it may be, must guide all scientific activity in general, while different disciplines and fields of study commonly have their own formal well-defined, and well-ingrained ethical principles and codes of conduct. Fields of study such as Anthropology which were once considered to be value free, are now associated with codes of conduct which have been proposed by the American Anthropological Association. In accordance with such guidelines, anthropologists and other social scientists must bear in mind the ethical, social and political consequences of their research and writing. However, ethics and codes of conduct remain poorly defined and poorly enforced for most fields of social sciences where Eurocentric paradigms still persist, and theories, hypotheses or observations were not adequately tested in the context of other cultures. While Anthropologists and other social scientists have commonly studied other cultures since the dawn of their fields, their subjects were often treated as objects of curiosity. A desire to improve the lot of their subjects was often lacking. Universities, institutes and institutions likewise have their own formulated ethics and codes of conduct which often reflect their respective values. As pointed out by Cassell and Sue-Ellen Jacobs (1980), codes of conduct were perceived by Anthropologists as intimidating injunctions, an interference in their work, or at best a necessary evil. These are naturally true of Historiography and other fields of social sciences too. In our view, an earnest effort must be made in the twenty-first century to bring as many fields of study within the purview of general, university-driven, subject-specific (or country-specific in some cases) codes of conduct, although this will prove to be an elaborate or time-consuming effort. University values and ideals are often communicated to students and research staff as a part of their orientation or training programme. These ethics and codes of conduct are formulated in addition to other duties and responsibilities of staff, students and researchers, such as the need to maintain a good learning environment or a work environment, among other things. Another body is "The World Commission on the Ethics of Scientific Knowledge and Technology" or COMEST which is an inter-disciplinary advisory body that was set up by UNESCO in 1998. The Commission formulates ethical principles in different areas of scientific activity.

Ethics and Codes of Conduct pervade different disciplines of science in some form. It is common for example, for doctors to take the "Hippocratic oath", in which they swear not to do any harm to their patients. Engineers likewise, swear to hold the safety of the public paramount as a guiding principle. A breach of ethics in some professions is considered to be a very serious offense, and in some cases, be even punishable by law. Such ethics and codes of conduct are however less well-defined for most fields of scientific activity which should include honesty and integrity in data collection, experimentation, hypothesis building, publishing of results and peer-review. Ethics and codes of conduct must however be considered important because other scientists and researchers rely and build upon such knowledge, and because scientists play an important role in the process of knowledge creation. Ethics and codes of conduct must seek to promote reliable and unbiased scientific knowledge. Thus, we have on one hand, aims and goals of research, and on the other hand, the principles of good research which include a quest for the truth, intellectual honesty, integrity, objectivity, transparency and commitment to social values among other things. These principles must be followed in letter and in spirit in all phases of scientific research. Last but not the least, a researcher must always be held accountable to the wider, international public for his actions; ideologies and narrow cultural perspectives have however ensured that this goal remains largely unrealized. The principles stated above will serve to act as a guiding force, and real-world situations and controversies pertaining to ethics and science must be interpreted accordingly.

According to Bolton, Scientific ethics typically refers to a standard of conduct for scientists that is further sub-divided into two broad categories. Firstly, standards dealing in methods and processes that address the design, procedures, data analysis aspects, interpretation, and reporting of research work performed. Secondly, standards that address the use of different types of subjects in research and the ethical implications of certain research findings. (Bolton, 2002) Other scholars such as Resnik (Resnik, 1993) have defined core principles that comprise ethical standards in research. These include among other things, honesty in all aspects of scientific endeavour such as analysis, interpretation and reporting, sharing of ideas and knowledge openly and without restraint, a commitment to scientific advancement, and moral obligations to society in general. Moral obligations to society must be consciously understood, and actively pursued, and ivory tower approaches or intellectual nerdism can be no excuse. Ethical standards in science are a work in progress and have been historically guided by cases such as the Tuskegee Syphilis study among others, and these have sought to hone our understanding of ethics in science to perfection.

Many scientists have tried to openly subvert ethics and the pursuit of the truth, and have even in some cases, resorted to fraud. One of the most famous and disgusting examples is that of the Piltdown man hoax. Charles Dawson was a fraudulent British archaeologist and paleontologist. By the end of the nineteenth century, Dawson claimed to have made many important fossil discoveries, and these brought him great name and fame. His most famous discovery, however, was made in 1912, when he claimed to have found the missing link between man and ape. Dawson's "Piltdown Man," made a major impact, exciting the scientific community to a great extent. The fraud continued to be perpetuated for several decades after Dawson's death, and was not exposed till the late 1940's and the early 1950's, by Kenneth Oakley, and Joseph Weiner among others.

In the year 2001, the German physicist Jan Hendrik Schon rose to sudden fame and claimed to have made a series of important breakthroughs in the areas of electronics and nanotechnology. Schon with two other co-authors published a paper in the eminent journal Nature, claiming to have produced a molecular-scale alternative to the transistor which is used in many consumer devices. Schon received many research awards as a result, and the work was hailed as one of the "breakthroughs of the year" in 2001 by Science magazine. However, Schon's work could not be replicated by other researchers and was soon proven as a case of fraud and misrepresentation. This led to Schon being fired by his employer, and the paper in the journal Nature revoked. His doctorate was sought to be revoked, and his scientific career was severely damaged.

Such frauds, including the fantastic claims made by Hindutva and some nationalistic writers, call into question the issue of ethics in science. Dawson's and Schon's cases which were driven by the desire to gain a name and fame constitute scientific frauds, but pseudo history writers and science fiction writers among others, mislead the public too, particularly the more gullible, winning name, fame and money in the process. How should we draw a distinction between all such endeavours? There are many tiers between absolute truth and absolute falsehood, and all these need to be investigated appropriately. N S Rajaram may have fabricated a Harappan seal to make it look like a horse (this is therefore unquestionably and undeniably fraud), but other researchers and pseudo-researchers who seek to mislead the public with ulterior motives are only slightly less guilty. In some cases, scientific research is carried out on trivial or frivolous issues (of questionable utility) while broader problems of society are overlooked. There is therefore a gamut of other issues to be addressed in ethics as it

pertains to science (and a communication of science or claims to science to society), and a thorough debate is necessary to understand the issue in all its facets and ramifications. In the overall scheme of things only unconscious mistakes can be fully exonerated, but the line separating mistakes from misconduct may often be thin and ambiguous indeed. In an interesting case from 1989, researchers Stanley Pons and Martin Fleischmann claimed to have built a cold fusion reactors, and rushed an announcement to popular press without proper testing or publication in a peer-reviewed journal. The duo was subsequently highly criticized for their actions, and as their work was found to be non-replicable by other researchers, eventually largely discredited as junk science even though it was naturally impossible to indict them for fraud.^{31 32}

Conclusion

In conclusion, we reiterate that some academic freedom can be given but within reasonable limits. Academic freedom must even be encouraged to the extent that it fosters innovation and creativity, and boosts scientific output or is necessary to discharge social functions. Therefore, creativity must still be encouraged and intellectual curiosity kindled. Academic freedom cannot override social responsibility and service to science under any circumstances and social responsibility and service to science must be the primary focus of any academician. Social responsibility must be defined for each role and universities and research institutes must play a greater role in fixing social responsibilities along with academic freedom which must be built into ethics and codes of conduct. More research papers can also be expected on the social responsibilities of scholars vis a vis their academic freedom, and the nuances and the intricacies of the issue can be explored in the days to come through scholarly debate and consensus. Thus, for example, there must be guidelines on the development and presentation of hypotheses. Distortion of truth must be discouraged and ideology-neutral science must be encouraged. Value-free disciplines must be identified, and guidelines formulated for such sciences. Research may be boosted on social responsibilities of scholars for each discipline, and this can become one of the more important movements of the twenty-first century. This can actually boost channelized and meaningful creativity in the long-term, and boost scientific output too, and serve both science and society in a meaningful way. To quote Jerry A. Coyne who puts it succinctly “ Can a geology teacher blithely tell his students that the earth is flat, or a European history professor that the Holocaust didn’t happen? That is not academic freedom, but a dereliction of duty.”

³¹ Research: Ethical Aspects of Long-term Responsibilities C.F. Gethmann, in International Encyclopedia of the Social & Behavioral Sciences, 2001

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