

Education - The Notion Potion¹ By Maury Seldin²

What we don't know doesn't get us in as much trouble as what we know that is not so. But rather than dichotomizing knowledge as valid or not valid, we would do better to evaluate the knowledge as to quality on a continuum. We should also evaluate the existing priorities for developing new knowledge and the institutional structures used to foster the development and dissemination of knowledge.

Introduction

Quality of Knowledge. Simply put, deductive reasoning is what proffers the highest quality knowledge. Such knowledge is an abstraction that logically follows from the premises as in a syllogism. Mathematics, the classic discipline built upon deductive reasoning, has been critical in the advancement of the quality of knowledge.

Once we move from an abstraction to reality there is the chance that the quality of knowledge deteriorates. This occurs because one or more premises may not conform to reality. Einstein, for example, showed that the Newtonian premise of the space-time system was not general enough so that the quality of conclusions in the application of the abstraction would be enhanced by reformulating "...the law in a way which does not presuppose any particular space-time system."¹

Much of the knowledge developed since the beginning of the Scientific Revolution has emerged from inductive reasoning. Inductive reasoning moves from the specific to the general, as distinguished from deductive reasoning, which moves from the general to the specific. The best quality inductive reasoning comes from the scientific method, which is based upon empirical evidence of reproducible experiments. The social sciences have greater difficulty than the natural sciences in being able to apply this rigorous methodology, and may be said to have "physics envy."

Substantial mathematical approaches are applied in the social sciences, but anecdotal evidence is frequently used in explaining social, economic, and political phenomena. Anecdotal evidence is of lesser quality than experimental evidence because the inferences made are to a population not necessarily included in the evidence. Nevertheless, this type of evidence is part of the inductive process and proves useful in enhancing the understanding of a system. Lesser qualities of knowledge include those derived from intuition, myth, and superstition.

Beliefs. As Americans, we hold as sacred the right of the individual to choose his or her beliefs. It is behavior, not belief, which is regulated under a system of constitutional law, including a Bill of Rights that protects the freedom of the individual. The system is based upon the inalienable rights of the individual, albeit under a system of law that reflects communal interests.

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Much of the world lives under systems built upon communal rights, allocating individual rights a low priority. Communism regulates some beliefs, at least as far as they can be ascertained. Religion has its set of faith-based beliefs, which vary within a given religion as well as according to the religion. What also varies among religions is the tolerance of the membership to hold personal beliefs that vary from the doctrine. In some cases, those who fail to conform to the doctrine in its entirety may find themselves cast out from the membership, or labeled as a deviant of some sort.

The development of a person's beliefs starts in the home, but external influences may cause substantial changes. Education, both informal as well as formal, may have significant effects on the emergence of the beliefs that dominate an individual's behavior.

Our concern in this essay is the role of education in influencing belief and then behavior. We are mindful that some behavior is instinctive, having been acquired genetically. We are also mindful that nurture (as well as nature) influences the way one thinks, and the resulting behavior. Thus, beliefs are viewed as part of a system determining human behavior.

This essay is part of a series of essays concerned with predicting outcomes and developing strategies to enhance the probabilities of desired outcomes. As such, the focus is on notions that serve as "potions" generating belief and behavior that significantly threaten our rights to our beliefs and our freedom of behavior within our legal system. We should also recognize that our legal system, along with our education system and other subsystems in our society have not even approached perfection. Indeed, there are a great many shortcomings in the operation of our system that need substantial attention in order to preserve the freedoms our institutional arrangements afford. It would therefore be useful to have a better understanding of our own education shortfalls as part of the process of dealing with the alleged shortfalls of the educational system that is adverse to our security interests.

Variability in Education

The American Condition. Education for Americans ranges from deprivation on the one hand, to excessive specialization on the other end of the spectrum. The great merit of the educational system is that there is a predominance of Americans with sufficient civic education to enable our nation to function as a democracy.

The deprived portion of the American population may be considered as deprived in the sense that their education is insufficient to enable them to participate in the mainstream of an economy that affords an opportunity to pursue happiness with the type of liberty identified as positive liberty. Consider *positive liberty* as a contrast to negative liberty. The *negative liberty* concept, as espoused by Isaiah Berlin is "... the area within which the subject - a person or group of persons - is or should be left to do or be what he is able to do or be, without interference by other persons..."ⁱⁱⁱ The Isaiah Berlin phrase that describes positive liberty is in the question, "What, or who, is the source of control or interference that can determine someone to do, or be, this rather than that?"

As discussed in the previous essay (*Visions and Values: Western and Islamic Heritages*) there is one long paragraph by John Gray in his book, *Isaiah Berlin*, which is especially enlightening on the comparison and contrast. Gray notes:

"It will readily be seen that, if negative freedom as Berlin understands it presupposes the capacity for choice among alternatives, it shares a common root with positive freedom.

Unlike negative freedom, which is freedom from interference by others, positive freedom is the freedom of self-mastery, of rational control of one's life. It is plain that, as with negative freedom, positive freedom is impaired or diminished as the capacity or power of choice is impaired or diminished, but in different ways. An agent may be unobstructed in the choice of alternatives by other agents, and yet lack the ability or power to act. This may be because of negative factors, lacks or absences - of knowledge [emphasis added], money or other resources - or may be because there are internal constraints, within the agent himself, preventing him from conceiving or perceiving alternatives as such, or else, even if they are so perceived, from acting on them. Such conditions as phobias or neurotic inhibitions may close off an agent's options, even to the point that they remain unknown to him, or else he may be constrained by irrational and invincible anxiety from acting so as to take advantage of them. In this case the power of choice has been sabotaged or compromised from within. An agent may possess very considerable negative freedom and yet, because he is incapacitated for choice among alternatives that other have not closed off from him, be positively unfree to an extreme degree. What both forms of unfreedom have in common is the restriction or incapacitation of the powers of choice" [Page 16].

Emphasis to the absence of knowledge as a condition of absence of *positive freedom* was provided here because the thrust of the discussion is to consider the role of education. The "money or other resources" might also have been emphasized because of the close correlation with knowledge.ⁱⁱⁱ The conventional wisdom is to look at such conditions and then seek to apply the value of equality, frequently with policies that would impair the freedom of others.

As Berlin writes, there is an incommensurability of some values, including freedom and equality. An incommensurability exists with some other values, such as justice and mercy. The great challenge is to use out intellect to reduce the conflict to a minimum. Such a reduction requires that we dig deeper into understanding the system so as to get to the root of the matter. In the case of the absence of knowledge, that root may well be the process by which one thinks, with particular emphasis on reasoning and the role of emotion.

The essay on thinking, *The Mind, Brain and Heart: A Paradigm for Predicting Outcomes*, sums up the process of thinking in the following excerpt from a paragraph titled "The Essence of the Process;"^{iv}

"The essence of the process of choice is that the mind, by using the brain, processes selective information in the ways it has learned through biological development and culture (nature and nurture). This process is in a paradigm that is based on values, also learned through biological development and culture (nature and nurture). However one chooses to classify emotions as related to reason, the intelligence of the mind deals with both the forces of tightly or loosely reasoned logic melded with emotional force that is significantly affected by culture. The blends may be different for different people and for different circumstances, and errors in reasoning do occur, but reason alone is not as good an indicator for understanding or forecasting behavior as is a combination of reason and emotion. But, both reason and emotion are rooted in the values. Thus, the big issue is to identify the values and the way in which the individuals or groups deal with the information. The subject of values is discussed in the next essay in this series..."

The *Visions and Values: Western and Islamic Heritages* concludes with this note;

"At the root of these values in our society is the individual and his or her views on truth, justice, and liberty. Values may change over time, but change in behavior is more likely

to come through a better understanding of the system so that individuals and society can better manage their affairs within whatever values they choose."

The education for that better understanding is deficient for the deprived portion of the American population. It is the responsibility of our American society to do a better job in ameliorating the deficiency. There are political issues as to the way to approach the problems as well as differences in values that influence not only what should be done, but how much.

Excessive Specialization. Academia, particularly the social sciences, has a great responsibility in developing the knowledge that lays out the choices and forecasts the outcomes, including unwanted side effects. The excessive specialization alluded to at the beginning of this section significantly inhibits the process.

Excessive specialization is not unique to the American scene. Indeed, the advances of Western civilization are in some measure attributed to the specialization of the development of thought.^v Going back to the Scientific Revolution, specialization by discipline developed as new disciplines were created because observations indicated a class of systems sufficiently different from the discipline of the researcher, and a taxonomy and set of rules provided a better opportunity to explain phenomenon than the paradigm of the mother discipline.^{vi}

The thrust of most modern research is in the box of the discipline of researcher rather than structured at solving problems irrespective of discipline. Consider the following quote from Thomas Kuhn of paradigm shift fame;

"Few people who are not actually practitioners of a mature science realize how much mop-up work of this sort a paradigm leaves to be done or quite how fascinating such work can prove in the execution. And these points need to be understood. Mopping-up operations are what engage most scientists throughout their careers. They constitute what I am here calling normal science. Closely examined, whether historically or in the contemporary laboratory, that enterprise seems an attempt to force nature into the preformed and relatively inflexible box that the paradigm supplies. No part of the aim of normal science is to call forth new sorts of phenomena; **indeed those that will not fit the box are often not seen at all** [*emphasis added*]. Nor do scientists normally aim to invent new theories, and **they are often intolerant of those invented by others** [*emphasis added*]. Instead, normal-scientific research is directed to the articulation of those phenomena and theories that the paradigm already supplies."^{vii}

The difficulty of going beyond the established paradigm is indicated in the following quote, again from Kuhn [Page 76].

"Philosophers of science have repeatedly demonstrated that more than one theoretical construction can always be placed upon a given collection of data. History of science indicates that, particularly in the early development stages of a new paradigm, it is not even very difficult to invent such alternates. But that invention of alternates is just what scientists seldom undertake except in the pre-paradigm stage of their science's development and at very special occasions during its subsequent evolution. So long as the tools of a paradigm supplies continue to prove capable of **solving the problems it defines** [*emphasis added*], science moves fastest and penetrates most deeply through confident employment of these tools. The reason is clear. As in manufacture so in science - retooling is an extravagance to be reserved for the occasion that demands it. The

significance of crises is the indication they provide that an occasion for retooling has arrived."

Academia needs retooling. Some progress is being made with interdisciplinary studies. The key is an effort to make a difference by enhancing our knowledge that is relevant to the issues, not simply demonstrating the expertise with rigor. Academia needs to actively seek to develop and disseminate the knowledge relevant to the issues, including basic research where the applicability is not yet evident, but where there is faith that in time it will make a difference.

Making a difference is what it is all about, and the birth of a new discipline is a way to sharpen the focus in studying a set of problems to get a better understanding of relationships useful in predicting outcomes. Auguste Comte, a philosopher in the Age of Enlightenment, was a pioneer in launching new disciplines in the social sciences. He believed that "...the future of humanity lay in science and that scientific methods could equally be applied to social studies" [see *A World of Ideas*, by Chris Rohmann, p.72]. Comte wrote about sociology, referring to it in the sense of a broad range of human sciences, as a discipline that should "descend from the other disciplines in a series of hierarchical steps..." [Kline page 208]. In Kline's words, "The hierarchy that Comte suggested went in descending order: math, astronomy, physics chemistry, biology (including physiology), sociology." The field of sociology was conceived as a "master discipline," to include included anthropology and psychology as well as sociology, all of which were born in the late 19th century.

Edward O. Wilson's hierarchy goes from physics, chemistry, and biology to sociobiology, which is the link to the social sciences that he develops in his concept of consilience. Within the social sciences, political science goes back to ancient times, but is combined with economics in the discipline of political-economy.

Economics emerges as its own discipline starting in the 18th century, and later develops into sub-specialties such as labor economics and land economics. When land economics subsequently develops as a discipline, the concern with its administration emerges into a discipline. For a long time, business administration was thought of as applied economics. But, it is obviously more. We don't call it applied behavioral sciences or applied mathematics. We integrate those disciplines and come up with a new category called business administration or management.

Thus, real estate administration has taken a variety of disciplines and emerged to deal with its own set of issues, which may include the natural sciences in dealing with the environment, and other social sciences in dealing with political and sociological issues. It is interdisciplinary, not simply multi-disciplinary. We will get better predictive ability for the decisions relating to societal issues affecting our quality of life by drawing on the relevant disciplines and attacking the salient problems rather than tackling the problems that simply increase intelligibility.^{viii}

Islamists and a Relevant Strategy

Education is key to solving other problems, as well. No where is the need more apparent than in the Islamic world, where a powerful set of beliefs guides the education of many young minds. The term *Islamists* refers to those Muslims who believe that all human beings should believe as they do and have a mission to bring about the change to reach that condition. Not all Muslims are Islamists; not all Muslims believe in proselytizing the rest of the world. The Islamists (Muslims with the intent to proselytize) are divided into two camps: those advocating force and those advocating peaceful means.

The Islamic/Arab Educational Condition. The major educational institution of the Islamic fundamentalists is the *madrassah*. These schools educate students on fundamentals beliefs, in many cases indoctrinating hate of the West, especially America and Israel.

The level of secular education in predominantly Islamic countries tends to be low. The thrust is to indoctrinate on religion (with an added hate of the West) rather than to educate in secular matters. According to the *The Economist*, in a 2002 article titled "Arab Development: Self Doomed to Failure," the Islamic education system is not preparing the people with an education that would enable them to participate in developing their economy and their economic participation in international trade [See sidebar].

Knowledge. "If God were to humiliate a human being," wrote Imam Ali bin abi Taleb in the sixth century, "He would deny him knowledge." Although the Arabs spend a higher percentage of GDP on education than any other developing region, it is not, it seems, well spent. The quality of education has deteriorated pitifully, and there is a severe mismatch between the labour market and the education system. Adult illiteracy rates have declined but are still very high: 6.5m adults are illiterate, almost two-thirds of them women. Some 10m children still have no schooling at all.

"One of the gravest results of their poor education is that the Arabs, who once led the world in science, are dropping ever further behind in scientific research and in information technology. Investment in research and development is less than one-seventh of the world average. Only 0.6% of the population uses the Internet, and 1.2% have personal computers."

"Another, no less grave, result is the dearth of creativity. The report comments sadly on the severe shortage of new writing, and, for instance, the decline in the film industry. Nor are foreign books much translated: in the 1,000 years since the reign of the Caliph Mamoun, say the authors, the Arabs have translated as many books as Spain translates in one year."

The Economist, July 4, 2002

According to the UN Development Programme's Arab Human Development Report 2003,

"The Report affirms that knowledge can help the region to expand the scope of human freedoms, enhance the capacity to guarantee those freedoms through good governance and achieve the higher moral human goals of justice and human dignity. It also underlines the importance of knowledge to Arab countries as a powerful driver of economic growth through higher productivity.

"Its closing section puts forward a strategic vision for creating knowledge societies in the Arab world based on five pillars: Guaranteeing key freedoms; Disseminating quality education; Embedding science; Shifting towards knowledge based production; and Developing an enlightened Arab knowledge model.

"AHDR 2003 makes it clear that, in the Arab civilization, the pursuit of knowledge is prompted by religion, culture, history and the human will to achieve success. Obstructions to this quest are the defective structures created by human beings- social, economic and above all political. Arabs must remove or reform these structures in order to take the place they deserve in the world of knowledge at the beginning of the knowledge millennium."^{ix}

The Social Science Perspective. There are some signs of an emerging interdisciplinary effort in the Islamic movement. The following analysis comes from the Institute of Contemporary Islamic Thought website [www.islamicthought.org].

In *Beyond the Muslim nation-States* (1977), he [Dr. Kalim Siddiqui] critiqued both the existing political order in the Muslim world and Muslim attempts to emulate western social science, particularly political science. Both studies led him to similar conclusions: that, in the words of *The Islamic Movement: A Systems Approach*, "the first priority... must be the development of integrated academic disciplines of economics, politics, and sociology, and alternative operational models for a future civilization of Islam."

An excerpt from that paper was quoted in the website of Muslimmedia [www.muslimmedia.com] for November 16-30, 1999 as follows:

"...the Muslim political scientist must ask himself a simple question: is he any different from non-Muslim political scientists who have identical degrees, university posts and publications? The honest answer is 'no'... In fact, the Muslim [social scientist] is the standard 'believer' in Islam, but his science is non-Muslim. The Muslim 'faithful' and the non-Muslim political scientist live in the single individual side-by-side and are the cause of much confusion. And when this schizophrenic 'Muslim political scientist' sets out to pronounce on 'the political theory of Islam' and 'the Islamic State', the confusion is worse confounded. "

The piece was titled, "Western social sciences and Muslim social scientists Muslims." The quote was the lead to the piece. The next paragraph is as follows:

"The formulation of Islamic disciplines equivalent to the western social sciences was one of the Muslim Institute's key objectives when it was established in the 1970s. Dr Kalim regarded this an essential pre-requisite to the re-emergence of Islamic civilization. The Islamic Revolution in Iran in 1979 changed the Institute's priorities to the study and service of the resurgent Islamic movement. Twenty years later, Dr Kalim is no longer with us; the Muslim Institute is sadly defunct, although some of its work is being continued by the Institute of Contemporary Islamic Thought (ICIT); the Islamic State is functioning as a prototype Islamic society for the future; and the Islamic movement is an established force for change in the world. But the problems facing Muslim social scientists, and the challenge of developing Islamic understandings of social issues, remain largely unaddressed."

The thrust of the thinking is that the Muslim academics, instead of a "cosmetic tampering with what remains essentially a western system of knowledge," ought to be

"Developing, defining, articulating and promoting the intellectual basis of the global Islamic movement, particularly in the crucial areas of political thought and the social sciences. **A major part of this work must be to break the stranglehold which western ideas and thinking have on the minds of Muslims** [*emphasis added*]."

That quote is from the Institute of Contemporary Thought's introductory statement on its web page. Some further information about the Institute of Contemporary Thought (ICIT) is as follows, also from the same site.

"The global Islamic movement is the dominant new reality in history. **The aim of the movement is to re-establish Islam as a source of power and justice in all Muslim countries, and throughout the world** [*emphasis added*]. At its broadest level, the sole aim of the Institute of Contemporary Islamic Thought (ICIT) is to contribute to the work of the global Islamic movement as best we can..."

"The Institute of Contemporary Islamic Thought (ICIT) was established in 1998 to continue the work begun by the late Dr Kalim Siddiqui (1931-1996), who was Director of the Muslim Institute, London."

The indication is that there is a rejection of Western thought and an effort for Islam to develop its own counterpart disciplines. The following, from the Muslimmedia piece, sums it up.

"The problem is simple: the western-trained Muslim looks at Islam and society through a western framework of understanding. Instead of understanding society and the world through Islam, he (or she) tries to understand Islam in terms of the western concepts which he knows. Thus, in the politics workshop, the discussion revolved around the 'compatibility' of Islam and democracy, and the need to implement 'neutral democratic values' (such as social justice, freedom of speech and human rights (as though Islam is lacking in these areas) in Muslim societies. Instead of non-Muslim concepts being studied, understood and judged according to Islamic values and standards, we find the westernized Muslim intellectuals trying to understand, and daring to judge, Islam through western eyes and according to western standards. This is inevitable because that is all they know, but it cannot possibly be correct."

They have a point in that their values are different, although with a great deal of overlap. Furthermore, the point is that they want to use their values in the structure of their society. That fits with pluralism and they can develop it on their own if they like. They do see this approach as interdisciplinary, which helps.

The emphasis added part reads to me as though these are fundamentalists looking to extend their authority beyond the Islamic countries to the rest of the world, or in their words "in all Muslim countries, and thought the world." If that means to impinge the freedom of Americans, that is a serious problem because we intend to remain a free secular society.

Having said that, perhaps moderate Islamic social scientists can figure out how to build a free society based on Islamic values. This may require a separation of church and state, but it can use sharia, or Islamic law, as a basis for civil law and use constitutional protections to prevent a tyranny of the majority. If that is too much to ask from a predominantly Muslim country, then it can make whatever progress it can make, but the line is drawn on terrorism that is intended to destroy our way of life.

The big difficulty that moderate Islam faces is that there are many local areas that want the benefits of modernization but are denied the liberty of pursuing it. The despots are protecting their power. Sometimes that power is challenged by the fundamentalists who would change the regime, but not bring freedom. Historically, the United States government has supported non-communist tyrants when the alternative was the tyranny of communism. The more recent parallel is supporting non-Islamic tyrannical regimes when the alternative was a tyrannical Islamic regime. The key alternative would be to foster a third option, a regime with liberty built within the values of Islam.

From a social science perspective, the design of an approach to the third option may include building a generic model of a system that engenders the Islamic values in a social, political, and economic structure. We have examples of models of the city as a system based upon American culture [See the discussion at the beginning of Chapter 2 of the monograph, *The Challenge to Our Thought Leaders*]. The scope of a model to be developed may well be focused on a single country, particularly one assumed to be of predominantly Muslim population.

These city models generally have an economic sector, a social sector, and a political or governmental sector. Additionally, depending upon purpose, the model may have environmental or other sectors. Social sciences have progressed far enough that solutions to problems within a single discipline are reasonably doable for a wide range of narrow problems. The most difficult problems are, however interdisciplinary. And they are usually the most relevant problems to improving the quality of life. The great challenge is in blending the disciplines to come up with an interdisciplinary solution.

The idea is that we should be moving towards an interdisciplinary model. That may start with a comparative analysis of Islamic and Western perspectives of sociology, economics, and political science, but ultimately must blend these disciplines to foster interaction among the various sectors. Such an interaction model will enhance the predictive ability of proposed programs intended to enhance quality of life. The model needs to be built upon a set of dimensions that encompass the relevant values of the subject culture.^x

Not all Muslim social scientists take the extreme view of the Islamists. Islamic terrorists are fundamentalists that have their own interpretation of the Koran. There are substantial differences in the interpretation of the Koran among Muslims, many of whom are not well educated in Islamic law, or *sharia*. Khaled Abou El Fadl, a UCLA law professor, draws a clear distinction on what Islamic law permits. As reported in *U.S. News & World Report*, April 15, 2002, he is an author whose articles and op-ed pieces make clear that "terrorism and suicidal bombing are 'not supported by the rigorous classical heritage' and 'are at odds with Islamic law.'"

Professor Khaled Abou El Fadl also says, "We are in the dark ages of Islam." He speaks of an intellectual reign of terror by the Wahhabi [an 18th century Sunni reform movement that continues to guide fundamentalist Islamic movements today, including the Taliban] fostering puritanical doctrines. He advocates a broad-minded, critical approach, which has earned him the wrath of many of his less tolerant co-religionists.

A leading Islamic social scientist, Akbar Ahmed, writes,

"A new theoretical and methodological framework to study global society in the 21st century needs to be developed, one which would incorporate the notion of social cohesion and the new diversity of global society and therefore recognize the need for Andalusian tolerance. We need to discover a new General Theory of Social Science."^{xi}

There is a substantial acceptance of the compatibility of democracy and Islam.^{xii} However, it is important to recognize that different cultures need to develop their own version of democracy. Consider the following quote from "*Building Democracy in the Muslim World*," an address by Lorne Craner, Assistant Secretary of State for Democracy, Human Rights, and Labor, at the Center for the Study of Islam and Democracy's Fourth Annual Conference in Washington, DC [May 16, 2003]:

"...The United States cannot impose democracy on a country. Our model is suitable only for our own country. We can only help those who want to bring democracy to their own country. Democracy must come from within.

"That is why we need to and will listen as you tell us what you need to craft and implement a democratic model that is compatible with your culture, your religion, your society. And indeed, across the Muslim world, people are doing exactly that. As the President noted last week, about half of all the Muslim people live under democratic rule in nations from Turkey to Indonesia. The governments of Bahrain and Morocco have recently held free elections. Jordan will hold elections next month. The people of Qatar have approved a new constitution guaranteeing basic freedoms..."

A relevant strategy dealing with the economic deprivation and lack of freedom coupled with other conditions that lead to adding to support for terrorist activities is discussed in a companion essay, *Winning Peace* (not published as part of the Wisdom Series but available on the ACSE website). Enhancements to education are an implicit part of that strategy.

Conclusion

Whether our concern is for the population segments of our nation that receive an insufficiency of education necessary for them to avail themselves of the economic opportunities in our society, or whether our concern is for the population segments of other nations that receive an insufficiency of education necessary for them to avail themselves of the economic opportunities in their society, we need to evaluate institutional arrangements necessary to facilitate the natural processes of society that would enhance educational development. This involves an understanding of the way people are thinking and their human nature.

Clearly, we need to deal with transitions.^{xiii} On the matter of human nature, please refer back to the three preceding essays, with particular emphasis on the quote from page 2 of *Thinking Changes Over Time*:

"Paul R. Ehrlich, in his *Human Natures: Genes, Cultures, and the Human Prospect*, writes, 'Permanence is often viewed as human nature's key feature; after all, remember, "you can't change human nature.'" But, of course, we *can* – and we do, all the time. The natures of Americans today are very different from their natures in 1940. Indeed, today's human natures everywhere are diverse products of change, of long genetic and, especially, cultural evolutionary processes.'" [Page 13]

Changing education and educational systems as well as research can make a significant difference, both here at home and in the world at large.

ⁱ See Alfred North Whitehead, *Science and the Modern World*, page 122.

ⁱⁱ Quoted from Isaiah Berlin's *Four Essays on Liberty*, pages 121-122. Also see quote and discussion in the book in progress, *Improving Decisions: Toward a New Age of Enlightenment*, available on the ASPEC Center for Scholarly Enterprise (ACSE) site, <http://www.spicequest.com/acse/index.htm>. Click on "Improving Strategic Decisions." It is in Chapter 8: National Security from Terrorists, side heading, Some Thoughts on Intractable Intellectual Segments, indented heading, Behavioral Politics.

ⁱⁱⁱ See *The Bell Curve: Intelligence and Class Structure in American Life* by Richard J Herrnstein and Charles Murray, published by Free Press, New York, 1994.

^{iv} Also see discussion of the subject in the book in progress, *Improving Decisions: Toward a New Age of Enlightenment*, available on the ASPEC Center for Scholarly Enterprise (ACSE) site. See Chapter 5, The Process of Choice: Mind and Values.

^v Much of this section is taken from the monograph, *The Challenge to our Thought Leaders*, by Maury Seldin, published by the Homer Hoyt Institute.

^{vi} This subject is discussed in the monograph, *The Challenge to our Thought Leaders*, page 15 available on the HHI site and the ACSE site. A quote from the monograph is as follows;

“Kline identifies eight steps in the development of a discipline, not necessarily taken in a particular order. [Pages 199-200.] The first four are as follows:

‘Selection of a class of systems with an associated set of problems... Observations of the behavior within the class of systems... Organization of the observations into taxonomy... Formation of ‘rules’ that describe the phenomena within the taxonomy either as a whole or for particular subdomains.’

“The “rules” concept refers to a very broad array of relationships defined with various degrees of rigor. The other four steps refer to the process of refining the rules in order to better represent the system. Depending on the complexity of the system, one may develop a “grand theory” or settle for descriptions of relationships that represent behavior associated with a set of problems.

“Generally, there is an empirical grounding ‘...which most clearly distinguishes modern from ancient study of truth assertions methodologically...’ It was in the area of physics that Galileo and Newton provided ‘... the first instance of successful formulations of rules following the steps all the way from 1 through 4.’”

^{vii} See Kuhn, Thomas S. *The Structure of Scientific Revolutions*, 2nd edition, Chicago, The University of Chicago Press, 1970, p. 24.

^{viii} It reminds me of a joke I heard about 60 years ago: The moron, when asked why he was looking by the lamppost for his lost dime when he dropped it far from the lamppost replied, “The light is better here.”

^{ix} See www.undp.org website for *Arab Human Development Report 2003*, Building a Knowledge Society.

^x This section of the essay appears in the book in progress, *Improving Decisions: Toward a New Age of Enlightenment*, available on the ASPEC Center for Scholarly Enterprise (ACSE) site,

^{xi} See page 160, *Islam Under Siege*, by Akbar S. Ahmed. Malden, MA, Polity Press, Blackwell Publishing Ltd, 2003.

^{xii} See website of Center for the Study of Islam and Democracy, <http://www.islam-democracy.org>

^{xiii} Transitions is the subject of an essay, not part of this series, published in *Real Estate Issues* and reprinted as an insert in the Hoyt newsletter.