

Pseudoscientific Beliefs of Utah State University Students: A Preliminary Report of Research in Progress

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(undated)

In recent years, a variety of well known reports on the status of academe have raised questions about whether American universities are fulfilling their responsibilities to educate. Generally, these critiques have emphasized the failure of universities to provide students with a strong and well-rounded classic, liberal and general education on which to build the remainder of their college training. Raymond A. Eve, Francies B. Harrold, and several of their colleagues have gone beyond a finding of a mere deficit in the training of American students and have documented the widespread existence of pseudoscientific beliefs among college students. Our students do not simply lack an acquaintance with Aristotle, Marx, and Freud, but they have filled this void with a patchwork quilt of ideas about astrology, bigfoot, psychic archaeology, UFO's, and so-called "creation-science." This doubly underscores the severe implications of an educational system that gives short shift to critical thinking skills while pursuing the siren song of a market driven economy for the scholarly citadel. Although a thorough examination of the specific failings of our own Utah educational system is sorely needed, my purpose today is the more modest one of briefly summarizing my own examination of the students of one Utah university to see how they compare with the Eve and Harrold findings for students at similar land-grant institutions in Texas, California, and Connecticut.

Two years ago, I undertook a modified replication of Eve and Harold's original study using two samples drawn from Utah State University and its neighboring Latter-day Saint Institute, a college-level religious studies system for students of the majority faith at Utah State University. The combined sample consisted of 252 students and included 10% of the students currently enrolled at the LDS institute. LDS students comprised 64% of the USU sample, a figure thought to approximate the LDS proportion of the entire undergraduate studentbody.

In their original study, Eve and Harrold (1986) examined a number of common beliefs that are not scientifically substantiated. These fell largely into two categories, creation-science and cult archeology. The former include many well-known examples of fundamentalist religious doctrine that are falsely asserted as scientifically substantiated fact: beliefs that the world is demonstrably only a few thousands of years old, that the ark of the Noachian Flood has been discovered on one of the mountains of Ararat, and a variety of related ideas. Cult archeology is a more diverse set of beliefs such as the idea that the earth was visited in ancient times by astronauts from another world, that these visitors were responsible for a number of great archaeological curiosities, the existence of several lost civilizations such as Mu and Atlantis, and the existence of psychic powers and their valid use in interpreting archaeological sites. A few other miscellaneous beliefs, not strictly archaeological in their content, such as the existence of UFO's, the Loch Ness monster and Bigfoot or equivalent creatures in various parts of the world, the factual basis of astrology, and the reality of reincarnation, ghosts and ghostly manifestations were also treated in their survey.

Eve and Harrold found that pseudoscientific beliefs were surprisingly common among university students. For instance, the existence of Bigfoot was accepted by at least 30% of the students surveyed in Texas, Connecticut, and California. Belief in the past existence of the civilization of Atlantis was equally strong. Reincarnation was affirmed by nineteen or more percent of students in all three states, and over half of all respondents in each state accepted the ability of psychics to predict the future. Eve and Harrold also found that anti-evolutionism was alive and well on university campuses. Twenty or more percent of students in all three states denied that the theory of biological evolution was correct, and approximately 30% of students believed that dinosaurs and humans had coexisted.

At Utah State University, students did not score significantly higher than those in the Eve and Harrold study on measures of creationist beliefs, cult archeology, and other paranormal beliefs. Indeed, the USU scores trended in a lower direction. This was particularly so for LDS students. These data are summarized in Table 1, which compares levels of belief on the items which made up these three scales in Harrold and Eve's (1986) original study. In spite of the relatively lower scores of Utah State students, I believe that most educators would still find the absolute levels of pseudoscientific beliefs in the Utah data to be distressingly high. Pseudoscientific gullibility is certainly not a rare phenomenon among our students.

Table 1. Summary of percentages of students from the University of Texas at Arlington and Utah State University who reported belief in items related to scales of Cult Archaeology, Creationism, and Other Paranormal. Where available, comparative data is included for comparable California and Connecticut university samples.

	UTA	CA	CT	USU LDS	USU non- LDS
Cult Archaeology					
"Space Gods" (built pyramids, etc.)*	7	12	19	7	4
Aliens visited the earth in the past*	22	25	42	13	14
Hyperdiffusion (pre-Viking trans-Atlantic voyages)	41	35	45	20	64
King Tut's Curse*	9	28	37	21	10
Atlantis civilization	33			22	41
Psychic archaeology	25			28	26
"American Genesis" (human origins in North America)	10			4	23
Creation/Evolution					
The world is 4-5 billion years old	55			60	40
Theistic (divinely directed) human evolution	48			34	23
Nontheistic evolution (unconnected with God)	14			49	2
Adam and Eve were created by God*	62			38	93
Dinosaurs and man were contemporary	41	25	28	30	27
Evolution explains the history of life*	51	60	56	69	27
The Bible is literally true*	41			30	32
Scientific support for Noah's flood*	65	45	48	28	56
Creation should be taught in public schools*	56			35	59
Evolution should be taught in public schools	72			73	39
Other Paranormal					
Loch Ness "Monster"	15	28	40	35	52
Bigfoot (Sasquatch)*	28	19	35	24	19
UFO's are spacecraft	22			20	23
Reincarnation	19	54	54	14	3
Black Magic	34	15	22	28	50
Communication with the dead is possible	38			58	23
Some psychics can predict future (prescience)*	59			31	39*
Bermuda Triangle*	28			35	31*
Astrology predicts personality	15			11	6
Ghosts exist	35			28	50
N=	443	367	169	71	180

*scale items

What can be said about the sources of pseudoscientific beliefs? Creation science oriented beliefs merit attention because of their connection with Fundamentalist religious tradition in the United States. Kehoe (1985) has discussed the functions of "creation science" within the New Religious-Political Right of contemporary conservative politics. She contends that the acceptance of the inerrancy of the Bible inherent in "creation science" serves as a manifest sign of dedication to the central value of the New Religious-Political Right: acceptance of authority versus "reality testing" and adaptation. In this context, scientific gullibility may be seen as one

facet of deference to authority, a kind of generalized willingness to accept as plausible that which appears to be commonly believed by others or what is asserted in folklore to have been proven by unnamed "scientists" or experts. Harrold and Eve (1987) have given support to Kehoe's assertions about the political and attitudinal underpinnings of the "creation-science" ideology by showing that Creationism beliefs correlated positively with a measure of dogmatism ($r = .32, .18, .33$ for TX, CA, CT) and a measure of political conservatism (anti-abortion, anti-homosexuality, pro-death penalty) which they termed a Moral Majority scale. These findings hold for the USU population, although the correlation was only a moderate one (Creationism-Dogmatism, Pearson's $r = .20$; Creationism-Moral Majority, Pearson's $R =$ relationship with reported number of books read that were not required in an academic course ($R = -.24$), a finding also reported by Harrold and Eve (1987).

One obvious question is the role of religiosity in these findings for LDS students. It is not particularly surprising that LDS students tended to be the lowest scorers on items pertaining to Cult Archaeology and Other Paranormal beliefs. However, contrary to what might be anticipated, LDS students tended to be the lowest scorers overall on the Creationism scale. This was generally true for most Creationism items. If religious fundamentalism is an important factor in any of these areas, one would expect it to be especially influential on these items. It is conceivable that the largely Southern Baptist population of the Texas university might account for that schools generally high results, but this is a less likely explanation for the tendency of Connecticut and California students to outscore even the LDS subset at USU. Unfortunately, Harrold and Eve have not provided a breakdown for their data by religion, religious or commitment.

Some internal evidence of a religiosity or religious commitment factor can be found in my data. Although the dogmatism and political conservatism measures used by Harrold and Eve showed only moderate correlations with creationism scores for the LDS sample, a stronger relationship exists between Creationism and the importance of religion ($R = .43$) and reported frequency of church attendance ($R = .75$). This suggests a strong institutional component in the acquisition of a creationist ideology. To check for further evidence of institutionally controlled socialization in creationist opinions, I examined several subsets of LDS students, including current attenders of the local LDS Institute of Religion, current nonattenders, complete nonattenders (who had never attended), active attenders, and inactive nonattenders. There were significant differences in the mean Creationism scores between current Institute attenders (mean = 17.76 vs 16.09), between current attenders and never attenders (17.76 vs 14.86), and between active and nonactive church attenders (17.31 vs 15.08). Notice that institute attenders had even higher mean Creationism scores than did church attenders in general. Subsets of institute attenders indicated that a creationist ideology was strongest among those who were senior level students. The very highest scores were found among the institutionally most committed--active church attenders who were enrolled in Institute and who had served as missionaries for the LDS church (a several year, voluntary, unpaid service to the church).

A religious connection does seem to be present when specific items are examined on which LDS scores outranked those of other students. If one considers those few items for which LDS students were the highest scorers in the comparisons, specific theological backing for the expressed beliefs does seem likely. For instance, ninety-three percent of the LDS sample accepted the literal existence of Adam and Eve (vs 55% of the Texas sample and 67% of the USU nonLDS sample). Similarly, only 2% of the LDS respondents accepted a nontheistic version of evolution (vs 14% of the Texas sample and 49% of the nonLDS group at USU). Forty-

eight percent of the LDS group felt that creation science should be taught in the public schools (vs 59% of the Texas students and 35% of USU's nonLDS respondents). Note also that the LDS group was the only one in which a smaller percentage favored the teaching of scientific evolution (39%) in schools than favored the teaching of creationism (vs 72% and 73% of the other groups).

The lower showing of LDS students on other Creationism items may also reflect theological issues that distinguish Latter-day Saints from Protestant fundamentalists. For instance, in spite of its literalist tendencies, such as a central role for the concept of Adam and Eve as literal progenitors of the human race, LDS doctrine has never included a concept of biblical inerrancy. Thus, Eve and Harrold's measure of fundamentalism may rely too heavily on Protestant concepts to be useful with an LDS audience.

Although doctrinal commitments may account for high creationism scores among LDS students on individual items, there do seem to be some exceptions to this relationship. For instance, LDS students were the least likely to espouse an ancient age for the earth. This rejection of an ancient age for the earth certainly cannot be accounted for on the basis of any theological mandate, since Mormons have not shared the traditional young earth theology of Protestant fundamentalism. Perhaps, what we are seeing here and elsewhere in this data reflects more a scientific naivety than a religiosity factor.

Cult Archeology and Other Paranormal beliefs showed a diverse pattern similar to that found for Creationism beliefs: LDS students generally had the lowest scores. Again, there were some exceptions, most of which also are understandable either in terms of LDS religious support for high levels of belief or of scientific gullibility. For instance, the belief in a North American origin for human beings and pre-Viking trans-Atlantic voyages has clear support in Mormon doctrine. A belief in the efficacy of Black Magic and the existence of ghosts also receive support in common LDS folklore.

Scientific gullibility may also be a factor in the few LDS scores in Cult Archeology and Other Paranormal beliefs. A number of items in these categories for which the nonLDS groups show higher levels of acceptance are particularly those items in which the pseudoscientific element is strongest (e.g., the existence of Bigfoot) in contrast to the quasi-religious overtones of other items (e.g., the existence of ghosts). What I am suggesting here is not mere tautology, but an as yet untested hypothesis that religiosity may correlate with high levels of a general "willingness to believe" ideas known to be accepted by others, so long as those beliefs are not specifically in conflict with subjects' religious doctrines. The LDS church is certainly not alone in its fostering of a willingness to accept the guidance of others in matters of belief. Although my current data do not lend themselves to a direct test of this hypothesis, I hope to explore such a relationship in the future.

References

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