

REASON & REVELATION

A MONTHLY JOURNAL OF CHRISTIAN EVIDENCES

July 2007
Vol. 27, No. 7

DESIGN RULES

Jerry Fausz, Ph.D.

[**EDITOR'S NOTE:** The following article was written by one of A.P.'s auxiliary staff scientists. Dr. Fausz holds a Ph.D. in Aerospace Engineering from Georgia Tech and serves as liaison to the NASA Marshall Space Flight Center. (All images in Dr. Fausz' article are Courtesy of Sandia National Laboratories, SUMMiTTM Technologies, www.mems.sandia.gov.)]

One of the most fascinating areas of modern engineering research is the development of what has become known as MicroElectroMechanical Systems, or MEMS. Imagine a closed-cycle steam engine no bigger than a pinhead that operates on a single drop of water (e.g., Frechette, et al., 2003, pp. 335-344), or mirror mechanisms for micro-optical systems with structures that can be obscured by a single dust mite (McWhorter, 2001; McWhorter, 2006). These devices are so miniscule that their operational performance has to be verified through a microscope. MEMS devices are used to actuate airbags in automobiles, precisely control optics in digital projectors and video cameras, and perform a variety of other functions (see "SAMPLES Program,"



Spider mite on mirror assembly

2005; "MEMS Technology," 2006). Yet, we have barely scratched the surface of possible applications for MEMS.

The fabrication process for MEMS devices is the epitome of exacting, painstaking effort, requiring the highest levels of intricacy and precision. Built on technology developed to fabricate integrated circuits, the procedures for building MEMS must follow methodical rules and be carried out in a tightly controlled environment. This requires very expensive, high fidelity robotic assembly lines operating in clean rooms with extremely low contaminant concentrations (one speck of dust could be the proverbial monkey wrench for these mechanisms). As in the case of micro-chips, MEMS fabrication controls must be followed strictly for the devices to have any chance of carrying out their design functions once their fabrication is complete ("SAMPLES Program," 2005).

Thus, in the design, fabrication, and operation of MEMS devices, it is clear that "small" is not synonymous with "simple" or "easy to understand or fabricate." As seen through the microscope, MEMS parts are easily as complex as their counterparts on the larger scale, if not more so. Furthermore, due to the strict requirements imposed by the meticulous fabrication process, the MEMS designer must exercise much more care in laying out the configuration of his design than would a designer working on a larger scale.

To aid the designer in accounting for the tight constraints of a particular MEMS fabrication process, the develop-

ers of that process typically provide him a set of design rules to follow in laying out the design. In turn, these rules usually are incorporated within the fabrication process itself through software that checks designs against these rules, and will not admit a design that violates them ("SAMPLES Program," 2005). So, we see that the design rules and the fabrication process work together to produce devices that ideally will fulfill the desire of the designer throughout its operational life. The design rules characterize fundamental aspects of the fabrication process and, thus, leave an indelible imprint of those process characteristics on each and every

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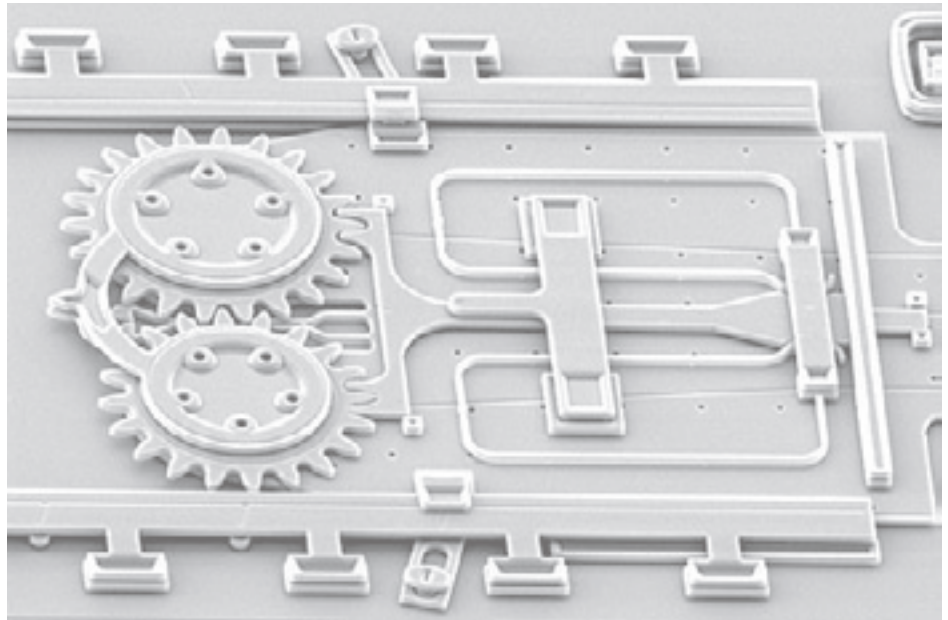


new design. These design rules, then, represent a bridge between the mind of the designer and the finished product, in a sense “guiding” the design through the fabrication process.

It is amazing that many of the engineers and scientists who have worked to make MEMS technology a reality believe that the vast, intricate, mechanical workings of the Universe, a Universe that appears to conform to immutable natural laws, came about through mostly random processes. They have witnessed the microscopic complexity of MEMS, yet they admit reasoning that suggests the galaxies, solar systems, planets, and stars evolved from “simpler” particles of matter that somehow came into existence at the beginning of time. They hold these beliefs in spite of their understanding of the painstaking process that is required to design and fabricate a single MEMS mechanism.

Scientists continue to discover with increasing clarity that the elementary particles of matter that make up everything in the observable Universe, though extremely small, are far from “simple.” In his book, *A Brief History of Time*, well-known physicist Stephen Hawking states:

Up to about twenty years ago, it was thought that protons and neutrons were “elementary” particles, but experiments in which protons were collided with other protons or electrons at



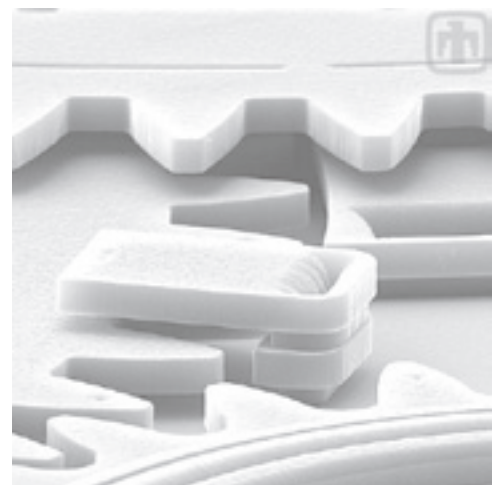
The incredible MEMS clutch mechanism. The minuscule gears are 50 microns across. Keep in mind that there are 25,400 microns to an inch.

high speeds indicated that they were in fact made up of smaller particles. These particles were named quarks by the Caltech physicist Murray Gell-Mann, who won the Nobel prize in 1969 for his work on them.... So the question is: What are the truly elementary particles, the basic building blocks from which everything is made? (1988, p. 65).

Since science so far has been incapable of even identifying the most elementary components of the Universe, it is unrea-

sonable to conclude that “small” means simple or easy. Given this unexpected complexity at the sub-microscopic (quantum) level, it is incredible that otherwise reasoned thinkers would conclude that everything we observe resulted from random processes.

Likewise, small structures in biological study exhibit extremely high levels of order, complexity, and information content. Now that scientists actually are able to observe single-cellular life, accounts of the immense complexity in these “simple” life forms are becoming increasingly abundant. Consider Dean Overman’s summary of the research of Sir Fred Hoyle and Chandra Wickramasinghe in his monograph, *A Case Against Accident and Self-Organization*:



Fully-functioning MEMS transmission

Reason & Revelation is published monthly by Apologetics Press, Inc. Periodicals postage paid at Montgomery, AL. **POSTMASTER:** Send address changes to **Reason & Revelation**, 230 Landmark Dr., Montgomery, AL 36117; **ISSN:**[1542-0922] **USPS#** 023415.

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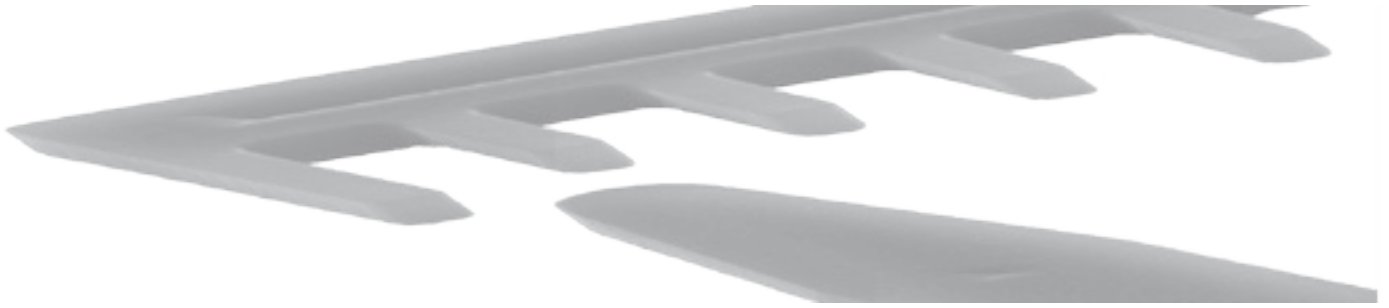
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Close-up view of one vernier; the teeth are two microns wide and the spaces between them measure four microns.

Because there are thousands of different enzymes with different functions, to produce the simplest living cell, Hoyle calculated that about 2,000 enzymes were needed with each one performing a specific task to form a single bacterium like *E. coli*. Computing the probability of all these different enzymes forming in one place at one time to produce a single bacterium, Hoyle and his colleague, Chandra Wickramasinghe, calculated the odds at 1 in $10^{40,000}$. This number is so vast that any mathematician would agree that **it amounts to total impossibility**... [T]he total atoms in the observable universe are estimated to be only approximately 10^{80} (1997, pp. 58-59, emp. added).

The performance observed in such a system (a bacterium) is so intricate and complex on such a small scale, that so far humans are incapable of duplicating it—MEMS is about as close as science has come to doing so. Yet, in stark contradiction, many scientists seem to accept that a “simple” life form must have organized by accident and, in turn, given rise to all of the life that we observe on Earth.

The complexity inherent in MEMS, especially in comparison to larger scale



Sitting atop some MEMS gears, this spider mite is the size of the period at the end of this sentence.

systems, suggests a more natural conclusion regarding the existence of the Universe. If one were looking through a microscope in a science class, or working in a laboratory, and unexpectedly saw tiny gears turning or pistons moving, what would he conclude? This scenario actually has been used as a story line in multiple science fiction shows, and the conclusion reached was not that the micro-



Complex MEMS ratchet mechanism

scopic machines had evolved naturally through random processes. Besides the fact that such a conclusion might make for a rather boring story, it is simply an unsound conclusion under the circumstances. Complexity on such a small scale, as we have noted, is not easy to design, so why would we ever conclude that it came about by accident? As in the science fiction scenario depicted, the intricate complexity that we observe on such a small scale is not only evidence of a designer, but also evidence of an incredibly advanced design capability—not of undirected random processes.

The fact that the Universe operates under seemingly immutable natural laws is further evidence of a designer. We have noted that MEMS designers utilize design rules to ensure the viability of their designs. While science has not fully char-

acterized the rules that govern the Universe, or even proved their existence, scientists firmly believe in them. Countless observations and experiments have demonstrated that the Universe appears to behave in repeatable and predictable ways, indicating that there is an inherent yet unobservable constraint being enforced on that behavior. Similar to MEMS design rules, the natural laws of the Universe determine what structures can viably exist in the system (Conservation of Matter and Energy), how they will behave (Causality, Laws of Motion, Relativity, etc.), and how long they will last (Thermodynamics). It simply is no more reasonable to assume that random processes gave rise to the behavior of the Universe than to assume that random fabrication processes could give rise to operational MEMS devices.

Indeed, experience with MEMS illustrates that the ordered complexity we observe at every level within the Universe, but especially on the small scale, is indisputable evidence of a Designer whose capability far exceeds human accomplishment. MEMS research is impressive and fascinating, but pales in comparison to what we observe at the microscopic level, and what we theorize at the sub-atomic level. The science and engineering of mankind has not come anywhere close



The world's smallest functioning triple-piston steam engine. One piston is five microns across or 1/5080 of an inch.



Drive gear chain and linkages, with a grain of pollen (top right) and coagulated red blood cells (top left, lower right) to demonstrate scale.

to duplicating the intricate functional complexity that exists in the realm of nature's small scale. The Designer responsible for these micro-mechanisms fully understands the fabrication process parameters that are required to bring them into existence and sustain their operation, and has used that process to its utmost effectiveness in the creation of every-

thing we observe. Furthermore, the "design rules" that have been employed to accomplish this are nothing less than the natural laws that, in turn, continue to constrain and direct the ongoing operation of His design.

Our Republic Depends on Christianity?

by
Dave Miller, Ph.D.

Much disagreement exists regarding the foundations of civil government and the perpetuation of civilization and society. The current "politically correct" viewpoint insists that the strength of America lies in its pluralism—the acceptance and celebration of differing religions, ideologies, and philosophies. The widespread attempt to sanitize American schools, courts, and government by eradicating all references to God, Christ, and the Bible are a manifestation of this belief. The thought is that the stability and continuance of the nation lies in its willingness to embrace diversity, toleration, and acceptance. In stark contrast, the architects of American civilization stated just the opposite.

Jedidiah Morse was born in Woodstock, Connecticut on August 23, 1761, the son of a Congregationalist minister.

After being homeschooled, he graduated from Yale in 1783—the year the Revolutionary War ended. Morse published the first American textbook on geography, *Geography Made Easy*, in 1784. His work in that field earned for him the title "Father of American Geography." His works were adopted widely in schools, colleges, and libraries and were used in thousands of homes. His eldest son, Samuel F.B. Morse, became a famous inventor, even developing the Morse Code ("Morse, Jedidiah," 2007).

In an election sermon given at Charlestown, Massachusetts on April 25, 1799, this American patriot offered the following chilling warning—an observation not unlike many of the Founders:

To the kindly influence of Christianity we owe that degree of civil freedom, and political and social happiness which mankind now enjoys. In proportion as the genuine effects of Christianity are diminished in any nation, either through unbelief, or the corruption of its doctrines, or the neglect of its institutions; in the same proportion will the people of that nation recede from the blessings of genuine freedom, and

approximate the miseries of complete despotism. All efforts to destroy the foundations of our holy religion, ultimately tend to the subversion also of our political freedom and happiness. **Whenever the pillars of Christianity shall be overthrown, our present republican forms of government, and all the blessings which flow from them, must fall with them** (1799, p. 9, emp. added).

If Morse was correct, America is in a dire predicament—literally teetering on the brink of national disaster and destruction. "Righteousness exalts a nation, but sin is a reproach to any people" (Proverbs 14:34). "Blessed is the nation whose God is the Lord" (Psalm 33:12).

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The Big Fizzle: Admissions from an Evolutionary Astrophysicist

Eric Lyons, M.Min.

No topic is more fundamental in the creation/evolution debate than the origin of the Universe. The theory advanced by evolutionists for several decades now, which supposedly best explains our existence from a purely naturalistic perspective, is known as the Big Bang. It has circulated via science textbooks all over the world. One of the leading publishers of science curriculum for many years has been Prentice Hall. In their 1992 *General Science* textbook, titled *A Voyage of Discovery*, they included the following section on “The Birth and Death of the Universe:”

How was the universe born and how will it end? Most astronomers believe that about 18 to 20 billion years ago all the matter in the universe was concentrated into one very dense, very hot region that may have been much smaller than a period on this page. For some unknown reason, this region exploded. This explosion is called the **big bang**. One result of the big bang was the formation of galaxies, all racing away from one another. This explains why the universe is still expanding (Hurd, et al., p. 61, emp. in orig.).

Since 1992 the “birth of the Universe” has been shaved substantially (from 18 to 20 billion years ago to 12 to 15 billion years ago—see Biggs, et al., 2003, p. 159), but the theory is more or less the same. Ask an evolutionist how the Universe came to be and you likely will hear that “it all started with a big bang.” (Good luck getting an evolutionist to explain from whence came the dense ball of matter that purportedly exploded and formed the Universe.)

Recent admissions from one astrophysicist in the popular scientific journal *New Scientist* are very significant in light of how saturated evolutionary science is with the Big Bang model. The cover of the March 3, 2007 issue of *New Scientist* reads: “What Put the **Bang** in the **Big Bang**” (emp. in orig.). The cover story was written by Dr. Peter Coles, who teaches astrophysics at the University of Nottingham in the United Kingdom. One might assume by the heading on the cover that *New Scientist* would inform readers what actually caused the explosion of the “pinhead” size ball of matter (193[2593]:33), especially since the heading was not a question, but a declaration. Instead, Coles elected to by-pass any explanation of the actual cause of the Big Bang. He wrote: “**Inflation** puts the ‘bang’ in the big bang” (p. 36, emp. added). Inflation is the “ultra-fast expansion just after the big bang” through which the Universe allegedly went in less than a millisecond, supposedly causing “most of the growth” of the 14-bil-

lion-light-year observable Universe (see Coles, pp. 33,36). According to Coles, this expansion puts the “oomph” in the big bang. “[I]nflation is now well established as an **essential** component of cosmology” (p. 33, emp. added).

Notice, however, the many blatant admissions Dr. Coles made throughout his brief, five-page article that completely invalidate any theory relying upon inflation and the Big Bang:

There is little direct evidence that inflation actually took place. Observations of the cosmic microwave background...are consistent with the idea that inflation took place, **but that doesn’t mean it actually happened.** What’s more, we still don’t know what would have caused it **if it did.** So how confident can we be that inflation is really a part of the universe’s history? (p. 33, emp. added).

Alan Guth (the physicist who proposed the inflation theory in 1981—EL) **cannot prove** that this “inflation” actually happened nor can he suggest a compelling physical reason why it should have (p. 33).

Within just a few years inflation had become an indispensable part of cosmological theory.... The only problem was that **there wasn’t a shred of evidence that inflation had actually happened** (p. 35, emp. added).

Inflation is undoubtedly a beautiful idea, but the problems it solves are **theoretical, not observational....** [T]he fact that the universe appears to be flat **doesn’t prove** that inflation happened (p. 35).

It is difficult to talk sensibly about scientific proof of phenomena that are so far removed from everyday experience. At what level can we prove anything in astronomy?... [D]o we really know for sure that the Universe is expanding?... **I would hesitate to say that it was proven beyond all reasonable doubt.** The same goes for inflation. It is a beautiful idea that fits snugly with standard cosmology and binds many parts of it together **but that doesn’t necessarily make it true.** Many theories are beautiful, but that is not sufficient to **prove** them right (p. 36, emp. added).

Cosmology is now a mature and respectable science. Yet there are still **many gaps in our knowledge.** We don’t know the form of the “dark matter” responsible for unexplained extra gravity. Nor do we have any real understanding of dark energy (p. 37, emp. added). [NOTE: Considering that “dark matter” and “dark energy” supposedly make up 96% of the observable Universe (Thompson, et al., 2003), admitting that astronomers do not have “any real understanding” of them



speaks volumes about the speculations and assumptions upon which the Big Bang theory is based—EL.]

If that were not enough, Coles then concluded his article with the following words.

We don't know for sure if inflation happened, and we are certainly a long way from being able to identify the inflation. In a way we are still as confused as ever about how the universe began. But perhaps now we are confused on a higher level and for better reasons (p. 37, emp. added).

Though man now knows more about the Universe than ever before, evolutionists are “as confused as ever about how the universe began,” albeit “confused on a higher level.” Such confusion should come as no surprise. After all, “[t]he fool has said in his heart, ‘There is no God’” (Psalm 14:1). “Professing to be wise, they became fools” (Romans 1:22). Aside from the fact that an explosion of a period-size ball of matter causing an orderly Universe defies both logic and the law of cause and effect (see Thompson, 2004, pp. 19-138),

Coles' recent admissions testify loudly against the best explanation evolutionists have for the origin of the Universe. Instead of titling *New Scientist's* issue “What Put the **Bang** in the **Big Bang**,” perhaps a better heading would have been “Confusion Taken to a Whole New Level.”

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IN THE NEWS

Embryos are fully human and deserve to be given all the rights inherent in personhood. This premise has been validated both biblically and scientifically (see Thompson and Harrub, 2001). Those in the scientific and medical communities who are pushing for expanding efforts in embryonic stem-cell research believe that human embryos should be created and destroyed for the sole purpose of harvesting the lines of embryonic stem cells they contain. In an effort to convince the masses that such barbaric injustice against human embryos is ethically permissible, embryonic stem-cell research supporters insist that research using embryonic stem cells will yield cures for a host of diseases.

Yet for all the potential that embryonic stem-cell research supposedly maintains, research and treatments using adult stems cells, in which human embryos are not murdered, has yielded far superior results (see Harrub, 2006). The latest research continues to provide promising stem-cell research options that do not result in the deaths of human embryos.

In the June 18 edition of *Newsweek*, Mary Carmichael reported on recent stem-cell research done with mice. She said: “Scientists revealed on Wednesday a new technique for bestowing all the flexibility of embryonic stem cells on mature skin cells in mice—an approach that could revolutionize medicine without the destruction of embryos” (2007, 149[25]:14). Concerning the newly discovered abilities of adult mice cells, Carmichael wrote that “scientists were ecstatic about the quasi-embryonic cells they'd created” (p. 14). In the

brief, two-column article, Carmichael cited two other studies, reported in January and April of this year, that offered alternatives to embryonic stem-cell research.

We must understand that even if embryonic stem-cell treatments offered the world a panacea for all illnesses, it still would be immoral and unethical to destroy human embryos (Proverbs 6:16-19). Similarly, it never would be acceptable to kill five-year-old children to harvest their organs so that others might live. But, the truth of the matter is, embryonic stem-cell research holds less promise than research being done with adult stem cells, a fact that is underscored by the latest findings reported in *Newsweek*. As the scientific and medical communities attempt to bulldoze their way through moral boundaries established by God, we, as Christians, must be aware of the issues and take a stand for the rights of all humans, including those who are still in their first stages of life.

Kyle Butt

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The Purpose of Education

Dave Miller, Ph.D.

The present period of American history surely will be shown to be a tragic time for education. Sinister forces essentially have hijacked American schools in order to make converts to their immoral, anti-Christian ideologies. They wish to convince young minds to accept their agenda and embrace their values. For example, homosexual activists wish to persuade young people that homosexuality ought to be accepted as legitimate sexual behavior—and even something that the student ought to try (e.g., Kertscher, 2006). The atheistic evolutionists seek to promote the theory of evolution as the correct view of origins, thereby dispelling belief in God and the Creation account of the Bible (Lyons and Butt, 2007). A host of additional advocates are working actively to articulate their own reasons for education.

In contrast to this subversion, most parents see education simply as part of the process that will prepare their children for adulthood. Typically, that preparation consists primarily of a “good education.” But why do parents want their children to go to school and get a “good” education? Most would answer: “so my child will be able to make a good living.”

In other words, parents want their children to be able to secure a suitable job that will, in turn, secure their financial future. They want their children to be able to support themselves and their families. No doubt you have seen the commercials that correlate number of years of education with annual income.

But what about the intentions of those who founded the schools of America? Did the founders of this country’s premiere institutions of higher learning share this same basic purpose for public education? Did they sacrifice their time, money, and effort to establish schools in America for the primary purpose of making it possible for students to “make a good living”? Did they understand the central objective of secular education to be to enable a person to secure a good-paying job? Allowing our educational forebears to speak for themselves in their own words reveals some startling realizations.

The first institution of higher education in the Colonies was Harvard College, founded in 1636. Named after its first benefactor, John Harvard, the 1636 rules of Harvard included the following declaration:

Let every student be plainly instructed and earnestly pressed to consider well

the main end of his life and studies is to know God and Jesus Christ which is eternal life (John 17:3) and therefore to lay Christ in the bottom as **the only foundation of all sound knowledge and learning.** And seeing the Lord only giveth wisdom, let every one seriously set himself by prayer in secret to seek it of Him (Prov. 2,3). Every one shall so exercise himself in reading the Scriptures twice a day that he shall be ready to give such an account of his proficiency therein (as quoted in Pierce, 1833, p. 5, emp. added; parenthetical items in orig.).

Over a century after the founding of Harvard, the state constitution of Massachusetts reiterated the original and continuing purpose of the institution:

Article I. Whereas our wise and pious ancestors, so early as the year one thousand six hundred and thirty-six, laid the foundation of Harvard College, in which university many persons of great eminence have, by the blessing of God, been initiated in those arts and sciences, which qualified them for public employments, both in church and state: and whereas **the encouragement of arts and sciences, and all good literature, tends to the honor of God, the advantage of the Christian religion,** and the great benefit of this and the other United States of America—it is declared, that the President and Fellows of Harvard College...shall have, hold, use, exercise and enjoy, all the powers...which they now have or are entitled to have (*Constitution...*, emp. added).

So according to the founders of Harvard, as well as the architects of the state constitution (themselves founders of the Republic), what was the purpose of education? To know God and Christ, to honor God, and to demonstrate the “advantage,” i.e., superiority of, the Christian religion to the benefit of the entire country. Based on that original purpose, it is evident that public education today is, to borrow a metaphor from Jesus, “like whitewashed tombs which indeed appear beautiful outwardly, but inside are full of dead men’s bones and all uncleanness” (Matthew 23:27).

SPEAKING SCHEDULES

Kyle Butt

July 15-17	Greenville, AL	(334) 537-9369
July 21-25	Santa Fe, TN	(931) 682-2228

Eric Lyons

July 3	Lineville, AL	(256) 488-5833
July 11,18,25	Decatur, AL	(256) 353-4256

Dave Miller

July 1,8,15,22	Columbiana, AL	(205) 669-0244
July 11	Wetumpka, AL	(334) 567-6561
July 18,25	Hope Hull, AL	(334) 281-6020
July 29	Cordova, TN	(901) 754-9893

The founding of the other premiere institutions of higher learning in America followed this same all-consuming, quintessential principle. For example, the second college established in America was William and Mary, founded in 1693. In the 1758 volume, *The Charter, Transfer and Statutes of the College of William and Mary in Virginia*, the purpose for its founding was explained:

There are three things which the founders of this college proposed to themselves, to which all its statutes should be directed. The first is that the youth of Virginia should be well educated to learning **and good morals**. The second is that the churches of America, especially Virginia, should be **supplied with good ministers** after the doctrine and government of the Church of England, and that the college should be a constant seminary for this purpose. The third is that the Indians of America should be **instructed in the Christian religion**, and that some of the Indian youth that are well behaved and well inclined, being first well prepared in the Divinity School, may be sent out **to preach the gospel** to their countrymen in their own tongue (as quoted in Adler, 1968, 1:371, emp. added).



Old campus building at Yale in New Haven, Connecticut.

The third college established in America, Yale, was founded in 1701 and had as its stated purpose to be a school “where in Youth may be instructed in the Arts and Sciences [and] through the blessing of Almighty God may be fitted for Public employment both in Church and Civil State” (“About Yale,” n.d.). The trustees stated the purpose on November 11, 1701 in the following words: “To plant, and under ye Divine blessing to propagate in this Wilderness, the blessed Reformed, Protestant Religion, in ye purity of its Order, and Worship” (Mode, 1921, p. 109). They further stated: “Every student shall consider **the main end of**

his study to wit to know God in Jesus Christ and answerably to lead a Godly, sober life” (Ringenberg, 1984, p. 38, emp. added). Regulations for students at Yale in 1754 included strong religious requirements: “All scholars shall live religious, godly, and blameless lives **according to the rules of God’s Word, diligently reading the Holy Scriptures, the fountain of light and truth**; and constantly attend upon all the duties of religion, both in public and secret” (as quoted in Adler, 1968, 1:464, emp. added).

The fourth college established in America was Princeton, founded in 1746. In 1752, one of the trustees of the school, Gilbert Tennent, and Samuel Davies, later president, prepared a brochure describing the college, which included the following explanations of its intended purpose:

NOTHING has a more direct tendency to advance the happiness and glory of a community than the founding of public schools and seminaries of learning for education of youth, and adorning their minds with useful knowledge **and virtue**. Hereby, the rude and ignorant are civilized and rendered human; persons who would otherwise be useless members of society are qualified to sustain with honor the offices they may be invested with for the public service; **reverence of the Deity**, filial piety, and obedience to the laws are inculcated and promoted.... [S]everal gentlemen residing in and near the province of New Jersey, who were well-wishers to the felicity of their country **and real friends of religion**...first projected the scheme of a collegiate education in that province. **The immediate motives to this generous design were: the great number of Christian societies** then lately formed in various parts of the country, where many thousands of the inhabitants, **ardently desirous of the administration of religious ordinances**, were entirely destitute of the necessary means of instruction and incapable of being relieved.... [T]he great scarcity of candidates **for the ministerial function to comply with these pious and Christian demands**.... [T]hese considerations were the most urgent arguments for the immediate prosecution of the above mentioned scheme of education.... It will suffice to say that the two principal objects the trustees had in view were science and **religion**. Their first concern was to cultivate the minds of the pu-



Princeton University in Princeton, New Jersey

pils in all those branches of erudition which are generally taught in the universities abroad; and, **to perfect their design, their next care was to rectify the heart by inculcating the great precepts of Christianity in order to make them good**. Upon these views this society was founded.... But as **religion ought to be the end of all instruction** and gives it the last degree of perfection...[s]tated times are set apart for **the study of the Holy Scriptures** in the original languages, and stated hours daily consecrated to the service of religion. The utmost care is taken to discountenance vice and to encourage the practice of virtue and a manly, rational, and **Christian** behavior in the students (Davies and Tennent, 1754, emp. added).

Dartmouth was founded in 1769 by “Reverend Eleazar Wheelock” with a charter granted by King George III to spread Christianity—initially to Indian youths:

KNOW YE, THEREFORE that We, considering the premises and being willing to encourage the laudable and charitable design of **spreading Christian knowledge** among the savages of our American wilderness, and also that the best means of education be established in our province of New Hampshire, for the benefit of said province, do, of our special grace, certain knowledge and mere motion, by and with the advice of our counsel for said province, by these presents, will, ordain, grant and constitute that there be a college erected in our said province of New Hampshire by the name of Dartmouth College, for the education and instruction of youth of the Indian tribes in this land in reading, writing, and all parts of learning which shall appear necessary and expedient for civilizing **and christianizing** children of pagans, as well as in all liberal arts and sciences, and also of English youth and any others. And the trustees of said college may and shall be one body corporate

and politic, in deed, action and name, and shall be called, named and distinguished by the name of the Trustees of Dartmouth College (*Charter of...*, emp. added).

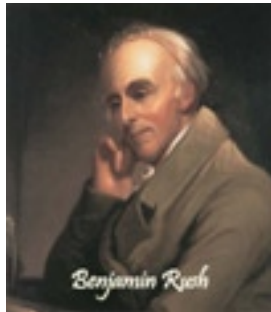
Harvard, William and Mary, Yale, Princeton, Dartmouth—this listing could be significantly expanded.

Even a brief glance at some of the original school mottos testifies to the purpose of education in America from the beginning (see “List of...,” n.d.). For example, Brown University, the seventh oldest institution of higher learning in the United States, founded by Baptist preachers in 1764 as Rhode Island College, has the motto *In deo speramus*, Latin for “In God We Hope.” Princeton’s motto is *Dei sub numine viget*, meaning “Under God’s Power She Flourishes.” Dartmouth’s motto is *Vox clamantis in deserto*, translated “A Voice Crying in the Wilderness,” a reference to Isaiah’s prophecy of John the Baptizer in Isaiah 40:3 (cf. Matthew 3:3). Another Ivy League school, founded in 1754 as King’s College, renamed Columbia College when it reopened in 1784 after the American Revolution, and now Columbia University, has the motto *In lumine Tuo videbimus lumen*, which means “In Thy Light Shall We See Light.”

George Washington University was chartered in 1821 (on land provided by George Washington) as Columbian College with the motto *Deus Nobis Fiducia*—“In God Our Trust.” Northwestern University was founded in 1851 by Methodists from Chicago to serve Americans in the Northwest Territory. The motto on Northwestern’s seal is *Quaecumque sunt vera*, meaning “Whatsoever things are true”—taken from Philippians 4:8. Also on the seal is a Greek phrase inscribed on the pages of an open book: *ho logos pleres charitos kai aletheias*, which translates as “The Word...full of grace and truth”—a reference to Jesus Christ taken from John 1:14. Even the University of California at Berkeley, a school known for its student activism, rebellion against America’s Christian heritage, and “hippie” counter-culture in the 1960s, has a Bible-inspired motto, “Let There Be Light,” taken from Genesis 1:3.

American education has strayed far from its moorings. We have shifted from a nation that saw **its very survival as de-**

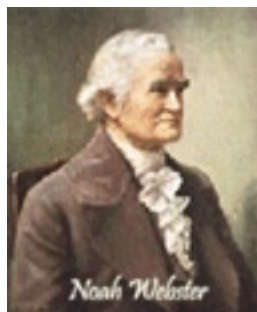
pendent on the spread of Christian principles through the schools, to a nation that literally disdains, repudiates, and has ejected the teaching of Christian principles from the public school system. The Founders would be appalled. Physician and signer of the *Declaration of Independence*, Dr. Benjamin Rush, asserted: “[T]he only foundation for a useful educa-



tion in a republic is to be laid **in religion**. Without this there can be **no virtue**, and without virtue there can be **no liberty**, and liberty is the object and life of all republican governments” (1798, p. 8, emp. added). Dr. Rush further stated:

We profess to be republicans, and yet we neglect the only means of establishing and perpetuating our republican forms of government, that is, **the universal education of our youth in the principles of Christianity by the means of the Bible**. For this Divine Book, above all others, favors that equality among mankind, that respect for just laws, and those sober and frugal virtues, which constitute the soul of republicanism (pp. 93-94, emp. added).

Noah Webster echoed those sentiments: “In my view, **the Christian religion is**



the most important and one of the first things in which all children, under a free government, ought to be instructed” (1843, p. 291, emp. added). The words of God to Moses at Mt. Sinai ought to serve as the guiding star for America’s schools: “Gather the people to Me, and I will let them hear My words, that they may learn

to fear Me all the days they live on the earth, and that they may teach their children” (Deuteronomy 4:10). “Come, you children, listen to me; I will teach you the fear of the Lord” (Psalm 34:11). Without the fear of the Lord instilled in the nation’s youth, all will be lost (Deuteronomy 5:33; 6:1-18; Jeremiah 7:23).

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NOTE FROM THE EDITOR

APOLOGETICS
PRESS, INC.

OUTSTANDING CHILDREN'S TV PROGRAMMING

Last year, we announced the construction of our television studio and the development of our children's program *Digger Doug's Underground* which airs on the Gospel Broadcasting Network (GBN). Our talented team of workers are making great progress and continue to hone their skills in the ongoing production of this children's television program. In addition to airing the show on TV, we have been determined to make these programs permanently available to a wider audience, enabling children to view them at their own leisure as often as they choose. We are happy to inform you that the next two episodes are now complete and available for shipping. Volume 2 of *Digger Doug's Underground* on DVD is packaged in an attractive and colorful DVD box. Episode Three is titled "Dinosaurs and Artifacts," while Episode Four is titled "Dinosaurs and Natural History." The first two episodes in Volume 1 were titled, "What about the Big Bang?" and "After Their Kind."

Here is a Christian program that rivals any secular children's TV show, yet offers to young minds critical content on God as the Creator. I have been amazed at children's reactions to this program. For example, consider the remarks we received recently from a college student in Tennessee whose five-year-old brother is an avid viewer of the program:

My brother's name is Bill, and he is five-years-old. He watches *Digger Doug* over and over on DVD and on GBN and has memorized facts and names of dinosaurs, as well as the different words examined on each episode (as defined each time by Willie the Word Worm). The other day, Bill and his friend Dustin were playing with some of Bill's

dinosaur toys. Dustin said one of the names of the dinosaurs and Bill responded, "No, Dustin, that's all wrong!" He proceeded to correct Dustin's pronunciation and included a few additional facts about that particular dinosaur, adding that he knew all of this information "because I have two [A.P.] books about dinosaurs." Bill can also sing the entire [*Digger Doug* theme] song. You know, I think the song is great. But it can get annoying after the first few hundred times you hear it. (Ha!)



Children are like sponges—and they inevitably “soak up” those influences to which they are exposed. How fundamentally critical for parents and grandparents to provide resources to shape and nurture their children and grandchildren in the direction of God and His Word. Even as Moses warned the Israelites, “teach them to your children and your grandchildren” (Deuteronomy 4:9), so Paul admonished Christian parents to “bring them up in the training and admonition of the Lord” (Ephesians 6:4).

I urge you to secure copies of both volumes of these DVDs (four 28-minute episodes in all) for children, grandchildren, and others you know who need the training and nurturing that this fascinating program provides and the timely truths it treats.

Dave Miller

See the Center Spread
for More Details