

Christian Engineers and Scientists in Technology Newsletter

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American Scientific Affiliation/Canadian Scientific & Christian Affiliation

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From the Editor

This newsletter is intended to facilitate camaraderie and exchange of information among CEST members. Reader responses and other inputs are welcomed. Please send me **your** input for this newsletter.

My thanks to those who contributed to this issue, i.e., Paul Carr, Dennis Feucht, Ruth Miller, John Osepchuk, and Tim Wallace. BY ■

No Answer! Physics Problem Challenge

I've received no answers to the problem posed in issue 19. Since you've had several months to mull it over, perhaps someone can answer it now. I will defer submitting a new problem until this one is solved. This is the problem:

A rear wheel drive race car's engine (including flywheel) rotates clockwise as

seen from the front of the car. It is racing counterclockwise around the semicircular end of an oval racetrack. What is the effect on the car of turning the axis of the rotating flywheel?

Another car has front wheel drive with a transverse mounted engine that rotates clockwise as seen from the right hand side of the car. What is the effect in this case?

Send answers to lwnyder@ieee.org. I will acknowledge correct answers in a future issue. BY ■

I Don't Think So! Reader Responds to Feucht Article

Comment by ASA/CEST member Tim Wallace on Feucht article Neglected Topics in Science and Christianity in issue 19.

I have one comment on Dennis's article, re Roswell. He mentions the "non-human" alloy allegedly found there. Dennis wondered why this evidence was not more fully advanced. In Vol 33 #1 of the *Skeptical Inquirer* (Jan/Feb 2009), in an article by Dave Thomas called "Roswell Update: Fading Star?" on p 52 we find the information that a chemist, Russell Vernon Clark provided metal, "supposedly from the crash, with unusual isotopic ratios, proving its alien nature." Thomas goes on to say that "The finding flopped. For one thing, non-earthly isotopic mixtures can be cooked up in college chemistry and government labs. Also, Clark's claim that the sample contained germanium-75 (an element so radioactive that it would decay into other elements in just days) was ridiculed, causing him to later acknowledge that the evidence was 'inconclusive'" There is a reference to *Albuquerque Journal* from 1997 which does not seem to be online unless you pay. But see <http://home.comcast.net/~tprinty/UFO/evid.htm>

Dennis covers a lot more ground than that in his article...but that's my only comment right now! Tim Wallace ■

Cars to Get a Mileage Jump-Start

Summary of an article in Bloomberg Business Week, 9.5.2011, page 35.

Hybrid cars get better mileage partly because they turn off their engines when stopped in traffic. This is not feasible in

regular cars because their lead-acid batteries would wear out too quickly if used that often to restart the engine.

Now a new battery design by Johnson Controls will greatly reduce that problem. In the new batteries "the electrolyte is stored in an absorbent glass mat, which has the look and feel of a strong paper towel. It serves as a pathway for the electrical charge and limits the exposure of important electrical components to the corrosive electrolyte, thus prolonging battery life."

It is estimated that "start-stop systems will be installed on 20 percent of new vehicles in North America by 2017, up from about 2 percent now." BY ■

Thermoelectrics to Generate Power

Summary of an article in Bloomberg Business Week, 10.3.2011, page 44.

Matt Scullin, who earned his PhD in materials science from UC Berkeley, is the prime mover behind an effort to convert waste heat from power plants to electrical energy using a thermoelectric device.

The "device looks something like a solar panel, with the silicon material wedged between two pieces of steel. A heat source warms one of the steel pieces, creating a temperature differential that generates electrical voltage." They are "designed to be easily manufactured in any size, from a few inches to as large as a flatbed truck."

"Scullin is most interested in tapping exhaust gas. Putting one of [the] generators in a smoke-billowing chimney could produce enough electricity to provide 10 to 100 percent of the facility's power," BY ■

Earth-Like Planet with Intelligent Life? Why 400 Years?

By Paul H. Carr, Ph. D., AF Research Lab Emeritus and ASA Member

On 7 September 2011 ASA/CEST member Paul H. Carr gave a talk to the Life Members group of the Boston Section of the IEEE with the title above

In it he discussed why it took 400 years from the time that it was suggested that there may be other Earths rotating around their own suns until the first planet was discovered outside our solar

system. He addressed the question, *Why did it take so long? and discusses the history of related developments.*

Here we present Paul's summary of his talk. The excellent vignettes used to illustrate the talk are at:

http://mirrorofnature.org/IEEE_IntelligentLife_Why400yr.pdf.

In 1584, Dominican monk Giordano Bruno envisioned the stars as "countless suns with countless earths, all rotating around their suns." When he found that proceedings were being initiated against him for new ideas such as these, he fled from his native Naples, Italy to Protestant Geneva.

Bruno's search for intellectual freedom led him to France, England, and Germany. Homesick, he accepted a patron's invitation to return to Italy. Their relationship soured shortly thereafter, and Bruno was imprisoned for seven years during his lengthy trial. The Roman Inquisition finally condemned him for heresy; he refused to recant and was burned at the stake in 1600.

In 1995, the Swiss astronomers Michel Mayor and Didier Queloz announced the first discovery of a planet orbiting a star similar to our sun (51 Pegasi).

ASA member Jennifer Wiseman, formerly Chief of the Laboratory for Exoplanets and Stellar Astrophysics at NASA's Goddard Space Flight Center recently reported the following.

"Recent searches for extrasolar planets have produced astounding results from both ground and space. Ground-based telescopes have uncovered over 200 new planets, mostly gas giants, including some "hot Jupiters" orbiting very near their parent star. Space-based flagship facilities such as Hubble Space Telescope (HST) have obtained deep, high-spatial resolution images of circumstellar debris disks not possible from the ground, and HST and Spitzer have obtained visible and infrared spectra from the atmospheres of these "Exosolar Giant Planets."

Why did it take over 400 years for this to happen?

It took a century to discover the law of gravity and three more to advance telescope and digital processing technology. Galileo (1564-1642) using the telescope, recently invented in Holland, was the first to observe the moons of Jupiter and the phases of Venus. This led

him to accept Copernicus' assertion that the sun was the center of our solar system.

Galileo's trial by the Roman Inquisition did not help. Paradoxically, the Inquisition was scientifically correct that Galileo did not have proof positive that the earth was rotating about its own axis as it revolved about the sun. His claim that the two-tides-per-day was "proof" later turned out to be correct, but at the time not enough was known about centrifugal forces. In addition, the stellar parallax expected from the earth's orbit around the sun was not observed. Unlike Bruno, Galileo saved his life by recanting and was placed under house arrest for the rest of his life.

Johannes Kepler (1571- 1630) adopted the heliocentric system, because he could place the five regular solids as spacers between the planetary orbits of the six known planets. The fit matched the known radii of the planets with enough perfection that Kepler was convinced that it was divinely planned. Before Kepler, astronomy was mainly observational. Kepler therefore made a unique contribution in postulating that a magnetic force kept the planets in orbit about the sun.

Kepler was on the right track, but it was Isaac Newton (1642 – 1726) who discovered that the force was gravitational. He realized that the gravitational law of attraction between a terrestrial apple and the earth was the same as that between the celestial moon and the earth. As the moon orbited the earth, the force of gravity caused it to continually "fall towards the earth." In contrast to Greek cosmology, Newton believed that celestial and terrestrial bodies had the same properties, as well as obeying the same laws of motion. The Newtonian synthesis of celestial and terrestrial motion is one of the great intellectual achievements of all time. Isaac Newton's laws of motion and gravity led to the acceptance of the Copernican system. The massive sun in the center was the source of gravity which kept the planets in orbit.

Newton had no "proof positive" that the earth moved, but his gravitational theory made no sense without a massive, comparatively immobile sun near the gravitational center of the solar system. However, in 1720 Bradley discovered stellar aberration, which does demonstrate the earth's orbit. Foucault's pendulum was

"proof positive." The plane of oscillation of the pendulum remains fixed with respect to the stars as the earth rotates beneath it. This proof in 1851 was anti-climactic, however, as the Copernican system had already been accepted.

Astronomers attribute the recent surge in planetary discoveries, in part, to technological advances in the last century*. These include:

- Significant improvements in spectrometers, instruments that separate starlight into its component colors for analysis.
- Better electronic sensors that record the incoming starlight collected by telescope optics.
- The development of computer software that can reliably discern fluctuations in starlight and the motion induced by the gravitational pull of unseen companions.

Furthermore, the maturation of these technologies has led to intensified searches and data gathering. Within the next few years, missions such as NASA's Kepler and SIM PlanetQuest are expected to provide firm data on Dominican Giordano Bruno's prediction of the existence of earthlike worlds over 400 years ago.

Scientists are more accepted today. In contrast to Bruno, Dominican monk Francisco Ayala was born in Spain in 1934 and ordained in 1960. The next year he came to the US where he earned a Ph.D. at Columbia University in evolutionary biology. He has been President of Sigma Xi and the American Association for the Advancement of Science and was recently awarded the \$1.6M Templeton Prize for progress in spiritual reality. Unlike atheist scientists, Ayala believes that religion and science offer complementary windows on the world.

*<http://planetquest.jpl.nasa.gov/index.cfm>

Paul H. Carr ■

On the "Dangers" of Microwave Radiation

Several weeks ago I received an email from a friend who lives in France. It stated: "The World Health Organization held conferences ... to evaluate the dangers of cell phone usage. Their conclusion: there is a danger of acquiring brain cancer from the power of the radio

frequencies adjacent to the brain when holding a cell phone handset against the head. ... Cell phone usage should be limited to three minutes.”

Then someone else sent me a link to a Youtube video at <http://www.youtube.com/watch?v=aAnr mJ3un1g> which speaks of dangers of radiation from wifi base stations, cell phone towers, cell phones, cordless phones, cordless baby monitors, I pads, laptop computers, etc. I wondered whether there may be new science to support these claims. So I asked for an update from John Osepchuk and Ruth Douglas Miller, ASA/CEST members who have served on the IEEE Engineering in Medicine and Biology Society Committee on Man and Radiation (COMAR) which has extensively studied the potential dangers of microwave radiation.

Ruth responded: “I don't know what is up with the WHO. The science of rf radiation in the microwave region was pretty well set when I left COMAR, we had nothing else to do. And then they come out with warnings about cell phones...perhaps John knows what study set them off.

“Anyway, on the video are plenty of points to warn the watcher of its weaknesses. No actual magnitudes of signals are given. We are shown a number and told it is "quite high" without units or reference. Compares local LANs to cell towers when they are by law significantly different in magnitude. Never mentions what health effects one should expect--and the only ones one can expect are thermal. A laptop generates far more IR radiation than microwave, I'm sure--my husband's gets too hot to hold. But my body sees the microwave radiation also as just heat. Fear mongering by turning the microwave into sound--somehow it's more deadly if loud? I am sorry this stuff gets out. Ruth”

John sent me this:

“Dear Bill:

“You have come across one of the sources of many propaganda pieces that keep Electrophobia alive as a modern sickness, which we in the IEEE (ICES [International Committee on Electromagnetic Safety] and COMAR) have been fighting for years.

“With regard to Havas commenting on Switzerland: She uses the common

techniques to scare with a receiver converting the detected microwaves to sound or light. We have such devices--some chirp and some blink etc. WOW! Just think how excited people were in the early 20th century when they crowded around a crystal detector receiver and heard sound from ‘radio’ waves. Of course, in those days ‘air waves’ were welcome. Today Havas and her counterparts turn that into ‘radiation’--- Oh My God!

“Even on the site you linked us to commenters debunk her--e.g. by pointing out that the study she referenced by Chou et al actually found no long-term effects etc.

“The dozens of other programs on that site--e.g. by Frances Fox just duplicate the propaganda.

“There are unfortunately many internet sites that spread fear--especially the many sites that teach people that there is torture and mind control by microwave beams employed by the government or even your neighbor.

“The specific program by Havas just exploits an example by a government of the Precautionary Principle--which is just saying be careful even if there is no proof of danger etc.

“A great rebuttal to the fear expressed by Havas is the last page, page 96, in the August issue of Scientific American. Here is a link to the on-line version of this [<https://www.scientificamerican.com/article.cfm?id=bombarded-graph-sci-aug-11>] but the print version is more impressive--presenting a friendly picture of the energy ‘bombarding’ us in the modern world and even quoting a member of ICES (Jerry Bushberg) as to why this energy is safe for us.

“As to the bigger picture, we in ICES and COMAR have been fighting Electrophobia for decades and I still participate in this fight. I attach a few items showing my involvement.

“1. Book reviews, including one co-authored by Havas--in Nov. 2010. Ken Foster published a shorter review in the IEEE Spectrum shortly thereafter.

“2. A paper of mine presented at the 2004 IEEE ISTAS symposium that reviews the overall problem facing ICES and COMAR.

“3. A recent short paper of mine which warned ICES members of the dangers of adopting statistical laws as laws of nature.

It will be reprinted in a publication of NEMA.

“The truth about EM energy is really being presented by IEEE ICES and IEEE COMAR. It is difficult to spread the word to the general public. Thus the IEEE is beginning a new program to publicize ICES standards. We believe most of the media personalities believe us rather than the alarmists--but many people still believe the latter. This fight surely is supported by our Christian faith despite the subtlety of the struggle for people’s minds.

“Best regards,

“John”

John sent me the attachments mentioned above, but I cannot include them here for lack of space. (If you want to see them, let me know and I will forward them to you.) Later he sent me the Economist article at this link:

<http://www.economist.com/node/21527022>

This article starts with:

“ALTHOUGH the myth that mobile phones cause cancer has been laid to rest, an implacable minority remains convinced of the connection. Their fears have been aggravated of late by bureaucratic bickering at the World Health Organisation (WHO). Let it be said, once and for all, that no matter how powerful a radio transmitter—whether an over-the-horizon radar station or a microwave tower—radio waves simply cannot produce ionising radiation. The only possible effect they can have on human tissue is to raise its temperature slightly.”

It ends with:

“The whole brouhaha over mobile phones causing brain cancer is a monumental irrelevance compared with scofflaws who insist on using their handsets to text or talk while driving. Regretfully, that is a far more likely cause of death or disfigurement than some inexplicable form of radio-induced glioma.” BY ■

Engineering and Natural Social Law

An article by Dennis Feucht

Engineering is often referred to as “applied science”. Engineering certainly applies science but engineering itself is not any of the natural or social sciences. The distinctive subject-matter of engineering is that of *design*. If anything, engineering is a branch of science, the

science of design. Although we usually regard engineering as applying the natural sciences such as physics or biochemistry, it can also be applied in a macabre way to the social order as a previous article, “Decision-Making and the Hidden Branch of Engineering”, presented. This is not uncommonly demonstrated by the model of society found in political writings. Thomas Hobbs referred to the political order as a “leviathan”. In a machine age, the machine model has dominated over the organic model, and the social order is organized in the manner of a machine, where its component parts are people, each with a defined set of tasks to perform.

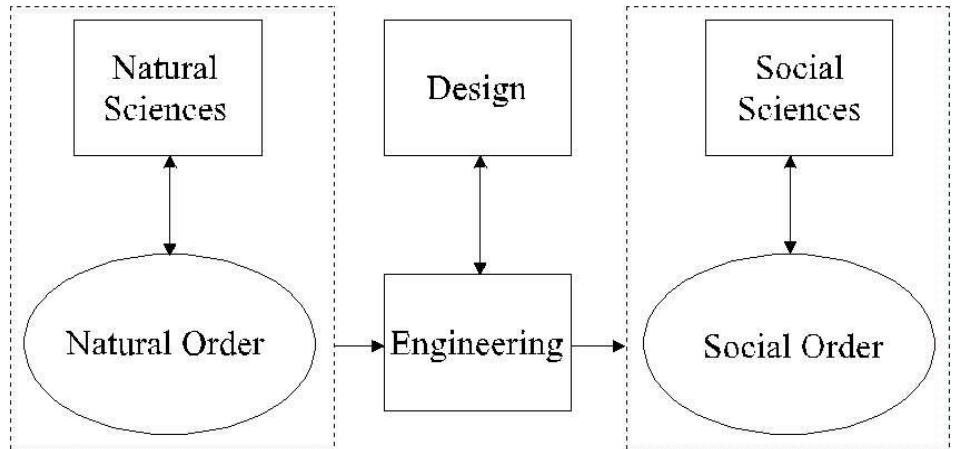
To demonstrate this model concretely, it would be an interesting and instructive task to design a calculator in such a way that the logical elements of it are prescribed as simple procedures, decomposed so that they can be assigned to high-school students on a football playing field. Then the calculator structure is effected by arranging the students on the field. For instance, an n -bit ripple counter can be implemented by placing in a row, side by side, n persons each having the following instruction: When tapped on your left shoulder, if your right hand is not raised, raise it. If it is raised, bring it down and tap the left shoulder of the person to your right. For someone facing the row of students, the raised and lowered hands constitute a binary count of the number of taps the rightmost person has received.

Another row or two of students in front of the first could be given combinational logic instructions so that the count could be decoded into a seven-segment numeric display. Each row would function as a combinational logic stage, with students placing their hand on shoulders of the students in the row in front of them according to a logic rule from the input of their own shoulders. Finally, seven students per digit would each control whether a segment of the calculator display is lit or not.

An audience in the grandstand could then see with their own eyes how digital electronics functions. Full adders and other such logic circuits found in calculators could similarly be implemented out of components who are persons functioning in much the same way that bureaucrats are intended to function in government or other

organizations. If the human calculator succeeds, a larger event could implement a small computer. The largest actual event of this kind on earth might well be the U.S. government. The machine modeling of engineering is thus related to human organization.

Returning to the more general understanding of engineering, it can be diagrammed in its relationship to both the natural and social orders as shown.



In this scheme, engineering usually relates what is known about the natural order to the social order, which is the realm of human will and action. The range of social desires to which engineering ordinarily responds are those that were given to Adam and Eve, in doing the work of transforming nature to be more in conformance with the satisfaction of human need, both before and especially after they left the Garden.

As engineers, we are ordinarily preoccupied with technical problem-solving and our attention is largely directed toward the natural order. We must understand the laws of nature – laws that those with a biblical worldview would ascribe to God – because these laws operate as given constraints in the search for solutions to problems. And engineering is basically technical problem-solving in its operational aspect. We have found that these laws are eerily reliable and not like humanly constructed social law. One of the early 20th-century physicists, Eugene P. Wigner, wrote a classic paper on “The Unreasonable Effectiveness of Mathematics in the Natural Sciences” in which he also observed that the Creator was, in effect, the Great Mathematician – or in biblical terminology, the Great Logos.

In the realm of social order, there is a bizarre situation, especially when it comes

to the development of mainstream thought about society and its ordering through social law. True social law is that which is given by God in his Law. This is law which is universal in both its application and observation and is not parochial to those holding a biblical worldview. It has been, in its various adaptations, the working basis of any historically significant society. In this context, the universal social law as understood by

humanity from social observation and experience is often referred to as *natural law*. It is a component in the natural order of humanity as given – the object of social studies and the “natural man” of the apostle Paul.

From a biblical standpoint, God has considered natural law, and human understanding of the natural order generally, to be insufficient in guiding human destiny, and has provided to a chosen thread of humanity an articulation of the universal social law (or Law) for the eventual benefit of all of humanity. Theologians refer to it as “special revelation” in contrast to the “general revelation” of the Logos in nature. The social sciences study humanity as natural, and progress has been made in gaining a better understanding of the psychology and sociology of ourselves. Yet it is insufficient as a basis for a society. It tells us what man *is* naturally but not what we *ought* to be behaviorally.

The insufficiency of natural law is caused by the insufficiency of humanity to satisfy the Law. From a biblical standpoint, in failing to keep the Law historically, humanity has a distorted view of it. This view is not insignificant but is insufficient. (Romans 1:18-21) It is a bootstrapping problem: how can morally defective beings see clearly about moral issues? That humanity is morally defective in general is not usually

contested. History provides abundant evidence of it. Yet most persons in particular are reluctant to view themselves as members of the general set. It is a reluctance to apply basic deductive logic.

Our limited human powers of observation and reason require great effort in making scientific advances. Our moral depravity or “fallenness” (hearkening back to the Garden of Eden story) make it even more difficult to achieve social progress. This human defect can consequently be observed to have prevented humanity from progressing socially in the same way as has occurred scientifically and technologically. Human interactions with the natural and social orders are different in a way that is also different. It is not hard to encounter scientifically-inclined characters who eschew the social order generally, and retreat deep within the confines of their respective laboratories when significant social discussion arises among their peers. Yet everyone is moral in nature. Everyone who complains about anything is exercising discernment between how things are and how they ought to be. Anyone with a dream or a vision of a better state of human affairs is thinking in fundamentally moral terms. And the nerd who retreats into the lab is making the moral judgement that human affairs are not worth the effort of a moral judgement.

A bizarre development has occurred over the last few centuries in mainstream thinking – and this includes the mainstream thinking within evangelical Christian circles – about social law. It is a catastrophic blunder hidden in plain sight. For those of a biblical persuasion, the Garden of Eden story of the fall of the Adamites (*adam* rendered “man” in most English translations of Genesis 2) can be summarized as follows: God does not give man the authority to determine his own laws to live by. (Or more precisely, *her* own law in that Eve instigated the rebellion against God’s given law and Adam went along with it.) We can conclude that the lesson to be learned in Adam’s downfall is simply to not legislate for ourselves. In any ordinary context, Christians are generally quick to agree that to determine for ourselves what is right and wrong is at the root of what has gone wrong with modern society and is the mother of all sins. This root of the rebellion against God is commonly labeled “humanism”, man deciding for himself what is right and wrong. It is also

referred to as moral relativism. What is bizarre is that almost all Christians, while passionately rejecting humanism in most of its social manifestations, at the same time passionately accept it when applied to management of the social order. How is this?

A common aphorism is: “You can’t legislate morality.” What is legislated, of course, is law. Legislatures are instituted and meet to make laws. And what is law? It is, no more and no less, the codification or articulation of right and wrong. In scripture, it always is the expression of what is right and wrong, and is also only rightly given by God to man. Once given, it is not to be picked through selectively (like Thomas Jefferson and other U.S. founders did of the Bible) for what is acceptable or not to man. In Deuteronomy, God gives Israel his law, which gave the obligations of the inferior party in the Covenant. Israel was not to subtract from nor add to it. (Deut. 4:2; 12:32) If kept, the covenantal promises are obtained; if broken the curses accrue instead. The law of God also teaches the behavior proscribed by the law through its punishments if broken and blessings if kept. Law functions as both a declaration and a teacher of its morality to society.

In science or engineering, it is unthinkable to suppose that anyone can change natural law. It is given. Yet in social law, we have come full circle from the Garden, or from Israel before Mt. Sinai. God was outvoted in the Garden and the golden calf was voted in at Sinai. In both cases, man democratically outvoted God. In both cases, the issue was God’s Law versus man’s law. Man’s law prevailed and man was subsequently punished for it. In the end, God’s Law still prevailed. Scientific laws are not determined by a preponderance of human opinion; why should social laws be?

In view of God’s organization of humanity under himself in scripture, man is given authority to adjudicate the Law but not legislate it. Early covenantal Israel is seen to function in this manner, and one of the books of the Old Testament is even named “Judges”. Later, when Israel’s government degenerated to that of a monarchy, Solomon, the second king of the Davidic dynasty and empire-builder is portrayed in the scriptural account with an accent on his skills as a judge of the people. Later, Yahweh judges Israel by bringing his case against them through his

prosecuting attorneys, the prophets, who are not so much grotesque doomsayers trying to scare Israel to obedience but are arguing God’s case against Israel from the curses of the Law. (See the opening of *Isaiah* for an example.)

As history passed through the centuries, kings often reigned as god-kings in that their word was law. Under Christian influence, numerous European kings subjected themselves to the higher lordship of Christ in their rule. A *lord* is someone whose laws you obey. The early American colonies were also exceptions. The Preamble to the Fundamental Orders of Connecticut explicitly recognizes the governing authority of Christ:

...where a people are gathered together the word of God requires that to maintain the peace and union of such people there should be an orderly and decent government established according to God, to order and dispose of the affairs of the people ... enter into combination and confederation together, to maintain and preserve the liberty and purity of the gospel of our Lord Jesus which we do profess...

By the late 1700s, the Enlightenment had made its impact in America through the British philosophers from whom the U.S. founders drew their ideas, men such as Thomas Hobbes and John Locke. Though their thinking was influenced by Christianity, they were heirs of the Enlightenment. The founders were influenced by the writings of these men and a mixture of Enlightenment and Christian worldviews blended in their thinking. This resulted in a government with Christian features but built on an Enlightenment base - superficially Christian but unbiblical at the core. Constitutional historian E. S. Corwin notes about the Mayflower Compact that “Whereas with Locke the ultimate basis of authority is supplied by natural law, here it is supplied by God.”

Nowhere in the U.S. Constitution is the lordship of Christ recognized. The J-word does not even appear in the document. So what *does* the Constitution recognize as the highest authority? It is repeated often: “We the People” are empowered to form a legislature and by a representational process, determine right and wrong. *Vox populi, vox dei*. The voice of the people is the voice of god. Yet few American Christians have recognized what is hidden in plain sight, that the

Constitution is founded upon the mother of all sins, the same sin we are told of from the Garden of Eden.

In our time, a few have discovered this simple deduction amidst the cultural noise of appeal to statist loyalties. Richard J. Maybury in *Whatever Happened to Justice* writes: "... there is a new religion in the world. The god of this new religion is government, and the ritual the worshippers perform is legislation." Even the Jehovah Witnesses, who are otherwise not known for their scriptural accuracy in some areas, will not divide their lordship between an earthly government and Christ's government by pledging allegiance to the human government, as though it were some abstraction. Even Rome did not make claims against private religion and it was not persecuted. Christians were persecuted by claiming over society a rival ruler to the Roman emperor. The political loyalty Christians gave to their King in baptism was to be undivided.

To draw a parallel in engineering to the double-mindedness of today's mainstream Christian loyalties, suppose there were a division among engineers. Some were in favor of accepting the established scientific laws as constraints on engineering design while others were selective, choosing only those laws that did not conflict with social constraints applied to their design activity. To clarify two points, scientific "law" is, of course, different than social law in that what in science is called a law is supposed to say something about nature and not about scientists. While it is *we* who discover and codify these laws through the refining activity of science – and in that sense they are descriptive rather than prescriptive – they nevertheless are intended to say something about the proscribed nature of the universe, about its givenness independent of what we make of it. Secondly, as the above diagram indicates, engineering bridges the gap between the natural and social worlds and in doing so, social constraints are applied in engineering projects. It is *we* who intend to conform nature to our purposes. Yet these social constraints are viewed differently than natural constraints, and we usually refer to them instead as *specifications*. Suppose some group of engineers were to elevate specifications to the status of natural law. Do you think they could succeed at engineering? Of course not; to try is to conflate fantasy

with reality. Yet the parallel in social law is the same. The Law of God is the reality governing social affairs. It is consistent with the reality of human nature. It can be broken and it has consequences, or kept with opposite consequences. To suppose that man can elevate specifications from legislatures to the same status as the Law leads to the same consequences: an unsuccessful social order.

The simple idea from scripture that man is forbidden to make law for himself is at first revolting to minds steeped in it for generations. Some Christians try to relegate the activities of the legislatures of modern governments to some other status than law-making so that they are not butting heads with God so directly. Yet it cannot be done. The biblical form of popular representation instead of a legislature would be a council of elders, or a Sanhedrin, whose function is to adjudicate the given law, not modify it. In giving man the authority to *use* the Law, through its application to cases, we have a role in applying our creaturely powers to adjudication.

This also implies that God intends his Law to be applied in real history in actual society, and not abstracted to the status of an eschatological curiosity. In this activity, over time precedents are established that form a tradition in how to best apply the Law to particular kinds of cases, and in legal language is referred to as *case law*. Properly speaking, case law is not law in the sense of judges legislating from the bench (though that can and does happen) but instead provides stability among finite and fallible judges in maintaining a consistent corpus of decisions. This is difficult enough in adjudication with a fixed set of laws. When laws are added yearly by legislatures – and some recent ones from the U.S. Congress are over a thousand pages long – only a fool could think that there is consistency among the over two million laws on the books in the U.S. alone. Astute social observers from Lao Zi to Cicero, James Madison to Winston Churchill, have all concluded the same. Churchill put it this way: "If you have ten thousand regulations, you destroy all respect for the law." In *Tao Te Ching*, Lao Zi put it more succinctly: "The more laws that are written, the more criminals are produced." And the Roman historian Tacitus hit the nail on the head: "The more corrupt the state, the more numerous the laws."

By making the prevailing will of the people a moral absolute, society is grounded on engineering that conflates the status of what is social with what is natural. The result is an inherently unstable form of government, just as a product designed in similar manner could not be trusted to be reliable. U.S. founder James Madison, in *Federalist #10*, said eloquently: "Such democracies have ever been spectacles of turbulence and contention; have ever been found incompatible with personal security or the rights of property; and have in general been as short in their lives as they have been violent in their deaths." Marshall Fritz puts it more simply and to the point: "Democracy is two wolves and a sheep voting to decide what's for lunch." Francis Schaeffer was beginning to discover this simple principle before he died when he recognized that democracy was the "tyranny of the 51 percent" and that under this form of moral authority, if 51 percent of the German people under the NAZIs wanted to kill the Jews that it would have been right to do so. (Whether nearly as many Jews were slaughtered as is claimed is a topic so politically sensitive that in present-day Germany you can land in jail by merely posing the question in public!)

To summarize a simple but profound yet beclouded truth in our time: the right political loyalty is one that puts all its eggs in one basket and makes sure it is the right basket. Engineers give their loyalties to the behavior of nature over the specifications of products. Specs must comply with the actual behavior of the product. No engineer could expect nature to be driven by specs. Yet that is precisely the foundation on which the societies of the developed world have been building for several centuries. It is the greatest apostasy since Babylon, yet it goes virtually unnoticed by most who oppose the elevation of man's laws over God's. In the context of American politics, the point is missed almost entirely. It is the great blind spot of the church in our time. Who is lord, Christ or the god-state?

As engineers, we could not do our work if we operated with this same mind-set in engineering. We have the advantage of a different mind-set that can help us to think our way out of the present grand compromise. I hope this article, while only touching the surface of a deeply rooted rebellion against Christ and his rule, will awaken some new thinking and

point to a different path than the one the herd has been running down. I hope it leads to subjects under Christ having undivided loyalties to his government alone, and thus to unified minds in both engineering and that which pertains to the social order.

Dennis Feucht, 2010 ■

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Bill Yoder, ed. ■

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