

Affiliation of Christian Engineers and Scientists in Technology (CEST) Newsletter

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American Scientific Affiliation/Canadian Scientific & Christian Affiliation

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Reader Feedback

I received a letter from John Osepchuk regarding my comments about the future of CEST and the modified masthead in the fall 2014 issue. Here is the first paragraph of his letter:

I received the latest issue of CEST newsletter and as always appreciate your labors therefor. I am somewhat disturbed, however, by your remarks on pp. 3-4 on the future of CEST and its name. I also note disapprovingly of your modified title for the newsletter leaving “Christian Engineers” in large type and dropping “Scientists in Technology” into a smaller type add on. I strongly hope that CEST remains the name and I hope the affiliation in the future will address some of the issues we had foreseen when we founded CEST in the late 1990’s—during which I coined the present name, CEST = “Christian Engineers and Scientists in Technology”.

John went on to describe some of the reasons why “scientists in technology” should remain in the name of the group. He also described a number of ASA-related activities he has been involved with in the past.

In another communication he sent a link to an article in Brandeis Magazine’s Winter 2014-15 issue titled *An Epistemology of Scientific Crackpottery*. Read it at: <http://www.brandeis.edu/magazine/2015/winter/featured-stories/crackpottery.html>

Much of John’s work has been involved in falsifying claims of “crackpots” who make unsupportable claims about the dangers of electromagnetic radiation.

BY ■

Spider and Fly Challenges

I received more input regarding the first Spider and Fly problem — from last summer’s issue. Bruce Nelson (Abiquiu, NM) sent equations that show that Dave Kramer’s contention about certain corner routes being shorter (fall issue) is true provided both the length and width of the room is less than twice the height.

But I received no responses to The Spider and the Fly II from the fall issue. I’m not sure if the readers consider it to be too hard or too trivial. In any case, I’m not posting a new problem this time in favor of giving you another chance to solve this one. Here is the problem:

The Spider and the Fly II

Consider a room that is a cube. A fly is caught in the spider’s web in the center of the ceiling. From a certain area on the floor there are 12 different straight-line* paths to the fly. Describe that area. Use a sketch if you like. Please send your answer to lwyoder@ieee.org. We’ll acknowledge correct answers in the next newsletter.

*straight-line in the sense that if the room is “unfolded,” spider paths across floor-wall, wall-wall, and wall-ceiling joints will be straight lines.

BY ■

Technology in the News: Cape Wind Loses Customers

Parties opposed to building the Cape Wind project in Nantucket Sound have brought lawsuits causing delays and making it difficult to obtain needed financial backing. Massachusetts utilities have used this excuse to cancel their agreements to purchase power from the wind turbine farm. However, Cape Wind officials state that they do not regard these terminations as valid due to the *Force Majeure* provision of the contracts that extends the milestone dates. An interesting editorial about this was published in *South Coast Today* on January 8. Read it at <http://t.co/WXM96vQvvl>.

BY ■

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.

- Send an account of a project you worked on.
- Send a note about something you’ve seen in the news that you think others would be interested in.
- Send a response to one of our math, physics, engineering, etc. challenges.
- Send a challenge question of your own.
- Send an article about something you’ve been thinking about.
- Send a photo you took.
- Send a comment on something you read here.

My thanks to those who contributed to this issue, i. e., Dennis Feucht, Bruce Nelson, John Osepchuk, Harold Reed..

We’d be glad to hear from you!

[BY](#) ■

Constitution and Bylaws for CEST

CEST has been in existence for more than 15 years, but has never adopted its own constitution and bylaws. I am providing here a draft constitution that was prepared for the proposed Affiliation of Christian Engineers before the decision was made to merge it with the Industrial Commission into CEST. Let's use this as a starting point to fashion a constitution for CEST. Your input is invited.

* * *

Affiliation of Christian Engineers:
Proposed Constitution

Article I. Name

The name of the organization shall be the Affiliation of Christian Engineers (ACE), a division of the American Scientific Affiliation (ASA).

Article II. Purpose

The purposes of the ACE are to encourage engineers who are Christians in their endeavor to serve the Triune God through their profession, and to present a united Christian voice to the world in matters relevant to engineering. These purposes are carried out through meetings, publications, and financial and spiritual support to members. Meetings will be held in conjunction with other professional engineering conferences, on our own and in conjunction with the ASA. Publications will include papers dealing specifically with the interface of Christianity and engineering, a periodic newsletter encouraging and uniting our members, and press releases or public announcements on the practice of engineering if deemed appropriate. Financial and spiritual support will be offered to students seeking careers in engineering as callings of God, to Christian engineers who find their faith and professional demands to be at odds, and to each other as God should reveal needs we are able to meet.

Article III. Membership

Eligibility: There shall be three classes of membership. All members shall receive newsletters and any other communications of the ACE, and shall be eligible for all benefits the ACE shall offer. Members of all classes shall be eligible to vote for officers and for changes in the constitution and by-laws. All members must give written consent to the ASA statement of faith, but they need not be ASA members to join ACE.

Full members shall have at least a bachelor's degree in some branch of engineering recognized by the Accreditation Board of Engineering and Technology (ABET) be licensed Professional Engineers.

ASA members shall be full members who are also members of the ASA, and shall be eligible to hold office in the ACE.

Student members shall be currently pursuing a bachelor's degree in engineering. Student members will pay reduced dues and may not hold office.

Election: Membership is conferred by vote of the Executive Committee following receipt of a completed membership application and dues payment. The Executive Committee may review and vote on applications through electronic communications.

Termination: Membership shall be terminated for any member who fails to pay dues for one year.

Dues: Dues shall be determined by vote of the members. Student members shall pay a fraction of the full member dues also determined by vote.

Article IV. Meetings of the Affiliation

Annual Business Meeting: shall take place in conjunction with a professional society meeting most members are able to attend. This shall ideally be the ASA annual meeting. Officers may be elected at this meeting, or, should the Executive Committee deem it appropriate, through e-mail.

Executive Committee Meeting: the ACE officers shall meet at least annually, prior to the Annual Business Meeting. This meeting may take place by e-mail or teleconference.

Members shall be encouraged to schedule meetings in conjunction with other professional society meetings (IEEE, ASME, ASEE, etc.) but no balloting will be undertaken as it is understood not all members will want or need to attend any of these meetings.

Article V. Officers

Elected officers shall be three: President, Vice-President, and Treasurer. Elected officers shall be members of ASA.

Appointed officers shall be Newsletter Editor and Webmaster.

The Executive Committee shall consist of the elected and appointed officers plus the recent Past President.

Terms of Office: Officers shall serve for three years and may be elected to a second term. Terms shall be staggered to assure continuity on the Executive Committee.

Nominations for officers shall be solicited by a nominating committee consisting of the Past President and two at-large members.

Duties of the Officers

President: shall call meetings, organize the agenda of the Executive Committee and Annual Meetings, and assure that the ACE is directed towards meeting its Purpose.

Vice-President: shall act as liaison with the ASA Executive Committee, handle correspondence with applicants for membership, and keep track of the membership roll and addresses.

Treasurer: shall attend to the finances of ACE and work closely with ASA on all matters of mutual financial concern.

Newsletter Editor: shall compile a regular newsletter to be sent to all members (medium to be determined.) Shall correspond with the ASA Newsletter Editor so that matters of importance to ACE are mentioned in the ASA Newsletter.

Webmaster: shall maintain the ACE webpage and listserv, providing appropriate links, and managing a listserv archive as appropriate.

Article VI. Amendments

This constitution may be amended at any time by two-thirds majority vote of those members voting by e-mail or regular mail ballot, and upon approval by the ASA Executive Council. A minimum of 15% of members voting shall be necessary to validate a ballot.

* * *

Please send your input regarding a constitution for CEST to lwyoder@ieee.org.

**Further comments on
Engineering in a Collapsing Civilization**

....
by Harold Reed

Dennis Feucht's article *Engineering in a Collapsing Civilization* ...in the spring 2014 issue drew responses from Harold Reed and John Osepchuk. I forwarded these comments to Dennis, and his responses were published with the comments in the summer 2014 issue. Harold Reed's further responses are published here.

* * *

Well, Dennis certainly provided a wealth of information on these topics. Responding to all of the items presented would take up too much time and space, but there are a few points I would like to bring up. The first is about fluoride. The purpose of adding fluoride to the water is, of course, to prevent tooth decay. Tooth enamel is made of hydroxylapatite. When the enamel is exposed to small levels of fluoride, the fluoride replaces the hydroxyl group and this makes it more resistant to attack by acids. Since acids are produced by bacterial action on sugars, and Americans consume so much sugar, protection of teeth from acid attacks seems like a good idea. It is true that moderate levels of fluoride can cause tooth discoloration and high levels can cause pitting or embrittlement, but this effect seems to end at about the age of 6. So if you can manage to avoid high levels of fluoride for your first 6 or 7 years, your teeth should no longer be in danger of fluorosis. But what about the rest of your body?

Dennis quoted Dr. Limeback as saying "*Skeletal fluorosis is a debilitating condition that occurs when fluoride accumulates in bones, making them extremely weak and brittle. The earliest symptoms? Mottled and brittle teeth.*" I have not had the time to read a lot of technical research and try to sort out the opinions from the facts, so I turned to someone who has -- the World Health Organization. Here is their official statement.

Ingestion of excess fluoride, most commonly in drinking-water, can cause fluorosis which affects the teeth and bones. Moderate amounts lead to dental effects, but long-term ingestion of large amounts can lead to potentially severe

skeletal problems. Paradoxically, low levels of fluoride intake help to prevent dental caries. The control of drinking-water quality is therefore critical in preventing fluorosis. The condition and its effect on people is caused by excessive intake of fluoride. The dental effects of fluorosis develop much earlier than the skeletal effects in people exposed to large amounts of fluoride... Ingestion of fluoride after six years of age will not cause dental fluorosis.

http://www.who.int/water_sanitation_health/diseases/fluorosis/en/

Note that they said it is caused by the "excessive intake of fluoride". Like most things, high doses are dangerous, but low doses are not. In fact low doses can have benefits. Vitamin C and aspirin are helpful in low doses, but in high doses over time they can kill you. The same is true for the claim that fluoride is a neurotoxin that can affect children's brains. The study cited by Mr. Feucht from www.scoop.it is for a population in China where naturally occurring fluoride salts in the area caused the children to be exposed to "high levels of fluoride". The report never says what these high levels were, but they are certainly much higher than the 1 ppm that is allowed in water in the US. If you look at the reported results, this exposure to high levels of fluoride reduced the IQ of the children tested by a weighted mean difference of 0.45. I take this to mean that if the average non-exposed child has an IQ of 100, the exposed child will have an IQ of 99.55. The authors even admit that this small difference "may be within the measurement error of IQ testing". If these high levels of fluoride have such a small effect, then the small levels present in American drinking water should not pose a problem.

Paranoia over the fluoride ion has caused courts in other countries to force governments to stop fluoridating the water, but so far it has not happened in the US. However, with the US Supreme Court ruling that Carbon Dioxide is a pollutant, anything is possible. When courts get involved with making scientific decisions, the results are usually not good.

Now let's move on to the GMO issue. Dennis states that "Obesity is mostly caused by a lack of nutrition". Really? Lack of nutrition makes you fat? Dennis is probably not alone in this opinion. But it comes from people making up their own

definition of what nutrition means. The dictionary definition is "the sum of the processes by which an animal or plant takes in and utilizes food substances". By this definition, broccoli, potato chips, and Hostess Twinkies all provide nutrition. The definition that the Food Police apply to nutrition is "food that we think is good for you". So of course when people eat lots of potato chips and Twinkies they are not getting "nutrition". If you apply the actual dictionary definition, my statement is correct. If GMO wheat has less nutritional value (which means it has more non-nutritious fiber) then that would be a good thing because it will help people lose weight! I am not aware of any GMO wheat that actually has a low nutritional value, but if it does exist, it would still not be a problem.

The really disturbing thing about this GMO debate is Dennis' claim that thousands of farmers in India have committed suicide because Monsanto lied to them about getting high yields and they went bankrupt when they didn't get the yields that were promised. I had not heard about this. People dying because of the lies that a company told them is a serious thing. So I looked into this story, and it turns out there is another side to it. This is a story about a type of cotton developed by Monsanto that was naturally resistant to the pink bollworm found in India. After years of development and testing, it was introduced to Indian farmers in 2002 and it worked well. But then in 2009 it was found that in four Districts in one State, the worms had developed resistance, and the crops were being eaten up. An investigation showed that two problems led to this. First, not enough "refuge planting" was done. This is a technique (required by Monsanto and the Indian government) where the farmer plants non-GMO cotton around the GMO cotton. That way when the few bugs that are resistant to the GMO manage to survive and try to reproduce, they will find lots of bugs in the normal cotton to mate with. This will dilute the genes that confer resistance and keep it from building up. In these four districts, some of the required refuge areas were not planted because these farmers did not want give up part of their crops to the bugs. The second problem was that somehow the farmers got ahold of some GMO seeds on the black market. Some of these were cheap "knockoff" seeds that came from China or other countries.

Others were Monsanto seeds, but they were not seeds that were supposed to be sold. These seeds were still in Beta testing and the tests showed that the insecticidal protein that was produced was not strong enough to do the job, so the level had to be increased to make them effective. The Monsanto “Bollgard I” seed that was actually sold on the market had a higher expression of the protein and was effective in killing the worms. Unfortunately for the farmers that bought the stolen seeds at a cheap price, their crops began to fail and many of them went bankrupt. It certainly is not fair to blame Monsanto for the failure of these seeds. Recently Monsanto has come out with a “Bollgard II” that produces two insecticidal proteins at once. This will make it very difficult for the pests to develop resistance. The Bollgard seeds are expensive compared to standard seeds, but the reduction in insecticide use makes them less expensive overall, so the farmer actually saves money.

Here is a link to a video about the success of Bt Cotton in India:

<http://www.isaaa.org/resources/videos/btotton/>

Now for Glyphosate. Dennis claimed that Glyphosate was toxic to humans and I said that was false. His response was that there is increasing evidence as to the “ill health effects” of Glyphosate. This is changing the subject. Toxicity refers to the short term effect that a substance has when you swallow it, or get it in your eyes, or get it on your skin. It does not refer to any health effects that it may have sometime off in the future. If you breathe asbestos dust, you may develop lung problems a decade later, but this has nothing to do with toxicity. Toxicity is about short term effects, and on that basis Glyphosate is not toxic to humans. In fact when the EPA (which is practically paranoid about toxic effects) did a study of Glyphosate, they assumed a case where a human spent a lifetime eating only Glyphosate sprayed foods and that these foods all contained the maximum allowed amount of residual Glyphosate on them. The study found that this person would still suffer no adverse health effects based on its toxicity. Maybe at 10 or 100 times these already high levels it could become a neurotoxin, but at the maximum levels any consumer would reasonably expect to be exposed to, there was no toxic hazard. The reason Glyphosate is so non-toxic is that it was designed to inhibit an enzyme

that is found only in plants. If you are not a plant, you don’t have a problem.

And finally I will address Aspartame. It is not a neurotoxin. This a charge that has been made on various internet sites, but there is no scientific basis for it. (Lajtha, A (1994). "Aspartame consumption: lack of effects on neural function", The Journal of Nutritional Biochemistry 5: 266–83.) Also, it was not banned by the FDA. What happened was that the FDA planned to approve it, but the approval was put on hold when objections were raised by some individual activists. After further studies were completed, it was approved. It also does not cause cancer at the doses normally used. This was the determination not only of the FDA (whose judgment was supposedly influenced by the Searle company), but also by the European EFSA and the National Cancer Institute. In a report released in 2013, the EFSA ruled out the “potential risk of Aspartame causing damage to genes and inducing cancer” based on the amounts normally consumed in diet drinks. Does it produce methanol as a degradation product? Yes it does. But the amount of methanol you would get from drinking a diet soda is less than you would get from drinking a glass of fruit juice or wine. The small amount produced can easily be metabolized by your body. Once again, the dose makes the poison. Just because a chemical analysis shows there is a trace of methanol or formaldehyde or glyphosate in your food does not mean it will pose a health hazard. At low levels even arsenic can be good for you! There are many other side effects listed on various web sites, but these are all self-reported effects, not the results of scientific studies. The FDA itself does not list any adverse health effects for Aspartame because when scientific tests were run they did not show any link to the reported side effects.

Many chemicals (or even factories that produce many chemicals at once) have been accused of causing cancer or miscarriages or some other problem. It is very difficult to prove a negative. No matter how many studies are done that show there is no effect, the critics can always come up with something else that may be a problem. This is the “paralysis by analysis” strategy that environmental groups often use against their opponents. There might be an enzyme that gets blocked by exposure to a chemical. Or

there might be a protein that gets modified. Or maybe it causes changes in the thyroid or pineal gland. Or maybe not. But even if A and B do occur together, it does not mean that A causes B. The population of storks may rise at the same time that the number of human babies increases, but that does not mean that storks bring babies! The same problem shows up in the case of Aspartame. The University of Miami study that Dennis cited found that people who drink diet sodas regularly are 61% more likely to have a major heart event. Is it not reasonable to assume that most people who are drinking diet sodas regularly are overweight? Why else would they be using diet drinks? Obesity is certainly a cause of heart problems. A and B may be occurring together, but in this case they are both the result of C.

After analyzing the raw results, the scientists then adjusted them to account for 10 different factors like race, age, exercise, smoking, etc. Surprisingly, weight (or Body Mass Index) was not one of the factors. This adjustment lowered the effect to a 48% increase that seemed to be due to diet drinks. If the BMI had been taken into account, the effect would certainly have been even lower. But even this result makes no distinction between Aspartame and other sweeteners. Maybe all of the increase is due to cyclamates or saccharin. No conclusion can be drawn from this study about any particular sweetener.

My overall conclusion is that hazards may exist in our food supply, but with all the regulations and testing that are required before anything can be introduced into it, the level of these hazards is very low. Yes there are companies that have millions of dollars invested and they will fight to keep their products on the market even if they pose a hazard. But there are also activists on the other side (many of them in well-funded universities) who will try to find problems with any new products that come out, as well as getting rid of as many of the old products as they can, even if they pose little hazard. Competition between the two sides is what will provide the most reasonable level of safety.

Harold Reed August 2014

Garden Engineering
The Challenge in the New Millennium
an article by Dennis Feucht

Humanity is emerging into a new state of existence. This can be sensed in a number of ways, not the least of which is the advancement of technology. Before the new millennium, humanity had a marginal impact on the ecosphere. As an unobtrusive traveler along with the physical creation, the earth seemed to be an inexhaustible resource, or as Loren Wilkinson put it, a frontier to be conquered. By the current century, it is increasingly evident that humanity is impacting nature significantly, though the picture is cloudy.

We are at a point in this emerging awareness that is like the controversy in the 1950s over the link between tobacco smoking and lung cancer. Until overwhelming evidence accumulated to establish the link, there were a sufficient number of doubters to sustain the controversy. Nowadays, we are in the transition of belief on a number of effects of technology on the ecosphere and on human health, both physical and mental, and ultimately on the human spirit. Some of the suspects eventually might not plead guilty or will unexpectedly lead to unanticipated realizations about their effects. Engineers are at the headwaters of this stream of humanly-induced causality. The responsibility ultimately rests with us as to how emerging aspects of technology will impact humanity and the earth.

In ASA, there is a contingent of people - most of them in the life sciences - who seem to be more sensitive about the effects of humanity on the natural environment than are engineers in the ASA. This is expected; the ecosphere is their subject-matter. Some have even wanted the ASA as an organization to take a stand in Washington on ecological issues. An organization, like a state or a corporation, is a collective abstraction, a kind of legal fiction that nevertheless is considered useful for certain kinds of analyses. The ASA leadership wisely deferred from taking such action, though within ASA, it is important to frame the right questions and seek the truth as answers.

Engineering has operated on a semiconscious model from the past, that of a frontier to be conquered. Nature as we know it is not optimal for human life. The biblical account of this in *Genesis*

attributes it to the rebellion of the adamites (humanity) against Yahweh (Lord) by Adam and Eve in the Garden of Eden, though it is hard to identify the causal link between their disobedience and the state of nature. Perhaps there is nothing cursed about the creation itself but only man's state of life within it. The Garden itself existed as part of the creation though it had a more desirable state. The Garden offered advantages that are not found outside it, and might even be envisioned as a grand goal of engineering. Whatever the explanation is (and it might not even be causal), humans thenceforth had an upward struggle for existence outside the Garden, depicted by hard manual labor in *Genesis* 3:17 - 19 followed by death. Under these conditions, engineering has a clear mandate: to overcome the problems posed by the state of nature we now find ourselves in. In this view, nature is a frontier with disadvantages to be overcome.

Millennia of human technological progress have resulted in success in overcoming much that is attributed to the fall of humanity out of the Garden. We are now crossing the boundary where the effects of this fall are being overcome and a genuinely new challenge for engineering is emerging. The style of life in the developed world in the twentieth century has been pleasant, as automation does our work and sustains a comfortable artificial environment in buildings. A small fraction of the population in the developed world do hard manual labor such as those with shovels building concrete-rebar foundations. Heavy equipment operators sit at their "desks" and pull levers or push foot pedals. Even the causes for mortality are being identified and ways of overcoming them explored. So is the emergence of humanity itself as a species in the new field of *transhumanism*. The American Dream is like a restoration of the Garden which is quickly spreading throughout the world as the ease of living of developing countries rises to be on par with the precedent set by America.

In view of this acme of success by frontier-driven engineering, humanity is now confronted by a new and different set of problems that is casting engineering into a different role in relation to the environment, that of Wilkinson's "garden to be tended". This new role does not end frontier-style engineering; the universe is

practically infinite in size and as humanity becomes spacefaring, the possibilities for frontier challenges continues unabated. For the home planet, however, garden-style engineering is becoming a necessity, as many indicators appear. These indicators, like cancer was to smoking, are not so clear-cut that many of them are not controversial. In many cases, they are a clash between frontier and garden engineering roles.

Some of the particular topics that manifest this clash, whatever the determination of their outcomes is, can be listed as follows:

- toxification of the ecosphere and human body through chemicals such as PCBs, glyphosate, and other herbicides and pesticides used in chemically-driven farming (*pharming*)
- pollution and degradation of naturally-optimized genomes through genetically modified organisms (GMOs)
- new chronic diseases caused by GMO side-effects uncontrollable by the present state of bioengineering
- anthropogenic effects on climate
- deleterious effects of microwave radiation on heating of the ionosphere and moving of the jet stream
- barium and aluminum nanoparticles sprayed aerially to reduce global warming as part of weather engineering
- deleterious effects of humanly-generated electromagnetic radiation on living organisms
- nuclear radiation release into the ecosphere from power plants and depleted uranium used in artillery shells
- halides added to the water supply and mercury in tooth fillings and adjuvants in vaccines
- dumping of trash and garbage into the ocean in large quantities
- deleterious effects on environment of clear-cutting and open-pit mining
- deleterious effects on human and animal health by use of growth hormones to increase yields
- removal of trace elements from salt and the addition of aluminum silicate

- pollution of air by heat engine exhaust and industrial burning
- destabilization of subsurface ground through fracking
- health effects of medical x-rays and nuclear-magnetic-resonance scanning
- bioengineered viruses and bioweapons
- misuse of broadcast communications technology for mind control (propaganda, deception, etc.)
- overpopulation relative to earth resources as utilized by the present technology
- rapid rate of extinction of plant and animal species

The list is not complete and some items might be of low priority or might even be removed. The point is that we are at a stage in the development of garden engineering where much is not known about many of the effects of technology, yet many new problems are now commonplace and growing in intensity. Garden engineers have plenty of problems to address, yet technology suitable for addressing them is in its early stages of development. For instance, it is possible to farm sustainably with acceptable yields without the toxic effects of chemicals or modified plant genetics, and methods for this alternative (sometimes labeled “organic”) farming are increasing and being refined. Yet extra-technical interests and influences keep high-volume chemical or agri-business farming dominant.

As though the technical problems of garden engineering were not enough, intermingled with them are social problems that relate to the reason for the fall of humanity out of the Garden: the “suboptimal” behavior of humans relative to solving these kinds of problems. For example, overpopulation is a direct consequence of sexual behavior. The *Genesis* mandate to the adamites is to “Be fruitful and multiply and fill the earth and subdue it ...” (Gen. 1:28). This mandate has clearly been fulfilled, and we are moving into a new phase for humanity of coping with the consequences of its over-fulfillment. The upper echelon of the social power structure has attempted to impose their solutions of contraception, abortion, sterilization, social incentives, chronic debilitations, and even

bioweaponry. The social incentives in China (combined with forced abortions) that are the one-child policy are now being rethought with some concern about its effects on Chinese culture. In the developed world, and especially Japan and Russia, loss of population is a concern. The average age in Japan 15 years ago was 58 years. Japanese demographics show a large aged population having to be supported by an inadequate working-age population.

In India, a large fraction of urban women have voluntarily chosen to be sterilized. Even in countries with massive population growth, there is a significant concern about overpopulation. It is driving the need for more water in Pakistan as its population grows along with that of India. The main source of Pakistan’s water is its one major river, the Indus, which flows through northern India. Along it, India has built more and more hydro plants and from it water is increasingly diverted for Indian farming. It is an international river conflict like the Colorado River and Mexico, but in this case is driving a dangerous political clash between nuclear powers over the *zero line*, the disputed boundary between India and Pakistan. Water is the core issue. Frontier engineering in one of the major U.S. weapons builders, a company of the military-industrial complex that is realizing that war is not sustainable as a business market, has discovered that a new carbon nanomaterial, hexene, can be used as a desalinating filter that is far more efficient than existing methods. The company is now building desalination plants in Pakistan and India. In this scenario, frontier and garden engineering merge harmoniously and swords are turned into plows, as it were.

Other garden-engineering problems are also entangled with social problems that ultimately are human spiritual problems. Farming could be sustainable for both the ecosphere and human well-being, but large corporate interests - Monsanto being the poster-boy for global corporate evil - promote toxic farming practices instead. Some salesmen of agricultural herbicides will demonstrate that glyphosate (Monsanto-trademarked Roundup) is safe by drinking some in sales demonstrations! This is a prime example of what I call *salesman science*. If the salesman does not fall dead on the sales floor, then the safety of the chemical is settled then and there. Few farmers in

attendance will ask for references to study of the chronic effects which, like smoking to cancer, are now being discovered and reported, as a multitude of heretofore unknown diseases have appeared in recent decades.

The particular challenges for garden engineering and its merger with frontier engineering are immense and this one article can only give a few hints that this is so. Yet this different kind of engineering that takes into account the sustainability and even the optimization of the ecosystem along with frontier-style problems is an expanded view of engineering overall. It also complicates the engineering challenge with added considerations, as though the number of criteria in engineering problems were not enough without it. This added burden makes engineering harder, yet if it is ignored, the trends point to a dismal future without it. Followers of Yehuweh and his human incarnation in Yehushua (“Yehuites”) have a particular advantage in thinking in this new view of engineering in that we are already predisposed to value the creation as engineered by the Creator, and see ourselves as called to the task of preserving it and *gardening* the earth. In other words, the engineering accomplished in the creation of the earth should not be ignored in our own engineering efforts. Those who ignore it will continue to pillage earth resources and destroy farmland, oceans, atmosphere and subterranea. How will this destructive trend end? It will take the intervention of the *elohim*, for we humans cannot save ourselves. As some ASA environmentalists have cited, *Revelation 6* has a more advanced, intervening being proclaiming that “the time has come to ... destroy those who destroy the earth.” May we as those called to preserve it advance the efforts of garden engineering and preserve the earth instead.

© Dennis L. Feucht, 20NOV14

**ASA/CEST Newsletter
Distribution**

The primary distribution of this newsletter is via email to ASA/CEST members as indicated in the ASA's online directory. Members are expected to keep their email address up to date there. No paper copies are mailed. Recent past issues are located at <http://www.asa3.org/ASA/cest> . All issues are archived at the YahooGroup asa_cest@yahoogroups.com web site, where they are accessible to group members. To join the group, go to groups.yahoo.com/group/asa_cest/join and follow the instructions.

Bill Yoder, ed. ■

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