

More Musings from Another Codger

John S. Mitchell, Contributing Editor

The 45th anniversary issue of *Sound & Vibration* was a special treat. With the usual thought-provoking editorial from a long-time friend and all-time favorite editorialist, George Fox Lang, science from an acclaimed technical leader Dr. Howard Gaberson and interesting case histories from Nelson Baxter, a highly respected individual who has successfully solved more baffling machinery problems than most will ever see, how could anyone who has spent most of their life in the vibration field ask for more? Of course there was more: terrific contributions from Alice Suter and Thomas Paez.

Politics Produces Nothing (or Less)

Here are a few comments on George Lang's excellent editorial: The main cause of today's stagnation is lack of visionary leaders, combined with giving naysayers, no matter how few, power to stop virtually anything. The United States couldn't be built as it exists today – today. The Empire State Building, Golden Gate Bridge, Hoover Dam, Interstate highway system and many more beloved landmarks and indispensable parts of our infrastructure couldn't be constructed or even considered under today's massive burden of regulations, restrictions, permits and legal challenges. Someone would find something that might offend or someone who could possibly be offended.

Inane regulations and lack of commitment increase costs by 20% or more and delay completion. Perhaps most important, the quick, decisive decision-making process that produced virtually everything we take for granted today has been paralyzed. Projects are bogged down with expensive and time-consuming, parasitic bureaucracy. Maybe it's due to maturity; more likely due to risk aversion. People don't want to be blamed or sued. So they create and hide behind walls of paper that prove conclusively that no one is responsible for anything!

Vision, Innovation and Risk

Large companies have very deliberate procedures to minimize risk that virtually prohibit innovation. Without a convincing market analysis, an innovative new idea can't get a green light. A little more than 50 years ago, the worldwide market estimate for computers was about a dozen! Fortunately Steve Jobs, Steve Wozniak, Bill Gates, Adam Osborne and others didn't work for large companies. Two early pioneering computer companies fatefully concluded that no one would ever want to use a computer as a typewriter! One of the two also concluded there was no market for a PC. Well-known, proud companies in their time, both long ago were consigned to the dust bin of history.

There are many more examples where lack of vision caused strong companies to utterly fail. In our dynamic past, people with a dream could start a company in a garage and grow it as fast as the idea merited – Hewlett Packard and Apple, to name two. Today it is much more difficult to start a company. In California, a world leader in aerospace and electronics through the '90s, there are myriad rules and regulations that make business and innovation difficult; virtually impossible if you are considering manufacturing anything. Facebook may be the final exception, but it's not a manufacturer.

We've lost a large part of our manufacturing base – perhaps irretrievably. Instead of encouraging innovative ideas for improvement, many executives are totally focused on finance and have no idea of or even interest in the underlying business that creates financial results. They focus on quarterly results, financial manipulations that paper over problems. Anyone pointing out potential improvements or even threats to the established business is discouraged. Many executives assume that if things get tight, improvements can be gained by ordering cost reductions. Lay off a few people and all will be better.

Someone once stated that no company ever reduced its way to success. Hat and buggy whip makers must have felt exactly this way as their business became extinct.

Newspapers, book publishers and some retail segments are in this same boat today. In a recent op-ed, columnist George Will noted that Apple totally changed the way music is distributed and killed numerous companies including Tower Records. Did anyone at Tower recognize the threat? The best executives must understand their customers, what is important and always be on the lookout for conditions, weaknesses and threats, or disruptive technology and ideas that could impact their business. Just because "we've always done it this way" is no reason why someone can't come up with a better way; or worse yet, find a way to eliminate what you do altogether.

The Beauty of Creativity

George Lang mentioned the X-15 aircraft in his editorial. A wonderful book detailing this adventure was written by one of the pilots (*At the Edge of Space: The X-15 Flight Program*, by Milton O. Thompson). It's an absolutely fascinating narrative about a group of exceptionally talented and motivated people challenging the unknown, developing highly creative solutions to conditions never before encountered, taking huge but well-studied risks – and they wouldn't accept anything but perfection and total

success. Also, Bob Abernethy's stories of developing the engines for Lockheed's SR-71 Blackbird are absolutely riveting; highly creative, driven people made fast decisions.

Fast decisions cannot occur today – because they first have to gain approval from the design board, safety committee, efficiency team, contracts administration, environmental compliance committee, approval board, happiness executive, lunchroom monitor, etc.

The entire bygone era produced a series of advances that couldn't occur today. Forty to fifty years later (SR-71 and X-15 respectively), the achievements of these marvels hasn't been exceeded – and probably never will. It has taken more than 20 years to get the F-35 from drawing board to flight, and recent rumors have it totally devastated in a recent war game by the new Russian Sukhoi T-50, that will be available to friends with a few rubles, and the Chinese J-20.

It appears that California will spend tens of billions of dollars to build 100 miles of high-speed rail tracks from nowhere to nowhere. Unfortunately, funding doesn't include trains or infrastructure; electrical distribution overhead wires, signals, stations, etc. but those are just details! Build it and they will come, money in hand.

Sadly, NASA, a once-innovative can-do example of our golden past has descended to politically-driven bumbling, bureaucratic mediocrity. While the interplanetary exploration and space telescope missions are fantastic demonstrations of visionary technological achievement, the budget gobbling space station has basically devolved to high-school science performed during a very expensive camp-out with great views and lousy food. On top of that, we have to say "pretty please" and pay a large sum for Russian taxi service to get there and back.

Politics versus Technology

Then there's energy independence. If the issue were solely technical, we could be close enough in 10 to 20 years to be dictating price while significantly reducing the financial health of those who may be less than friends along the way. The issue is obscured by a failure to distinguish between transportation fuels and power generation. It is total fallacy to expect that used cooking oil, algae or anything else will replace petroleum-based fuel for air and ground transportation in the foreseeable future. Safety, energy density, availability, infrastructure and other factors overwhelmingly dictate petroleum liquid fuels for transportation over the short and medium terms.

Electric car users won't recognize, much less admit, that much of the energy needed to charge their beloved runabouts come

from despised coal power. And can a soccer mom safely carry dad, three kids and their gear to an away game in a hybrid or car rated at 56 miles per gallon? Lawyers seem to believe that if they legislate a requirement like the mandated CAFE (Corporate Average Fuel Economy) standards of 56 miles per gallon, industry will comply. As one bright government auto regulator was quoted when someone mentioned that requirement was contrary to the laws of physics: “what law; we’ll have it repealed!”

The real issue isn’t technical or even primarily technical – it’s strictly political. Politicians and environmentalists against exploiting resources in Alaska and elsewhere have probably never been there. To argue that a footprint the size of Dulles Airport will somehow despoil a barren Arctic plain is utter foolishness. On the positive side, the oil has been there a long time and isn’t going anywhere. Just watch how public opinion will change if there is a major disruption in the Mideast causing gasoline to rocket toward \$10 a gallon. We can only hope that the politicians and groups saying how extracting oil so horribly offends Gaia* that they will be hauled to account when gas rationing strikes again.

Nuclear power is another example. We have people who know nothing and care nothing about technology or risk analysis driving public policy regarding electric power generation and distribution. These are people who disliked sixth-grade science and now think they have the knowledge and wisdom to design and manage a nationwide electric power grid. Windmills and solar cells good; nuclear and fossil bad; coal never! Will citizens accept no-power days when the sun isn’t shining and the wind isn’t blowing? This does happen.

In California, windmills kill hundreds of protected eagles, hawks and owls. If the same thing were done by a citizen with a rifle, a long jail term among thieves and murderers would be a certain future. Several recent letters to the editor have stated, seriously it’s assumed, that the writer lives on a zero-energy footprint because all their energy needs, including charging their electric car at night, are met by rooftop solar cells. Wonder where that nighttime energy comes from? Do they lose their refrigerator when the sun doesn’t shine? Maybe they keep chickens and a cow. But wait, there’s more – that’s not legal!

Nuclear Policies

Another, more distressing fact about nuclear power: As Lang mentioned, like ‘em or not, we no longer have the knowledge or manufacturing capability to construct nuclear power plants. In addition to allowing engineering skills to atrophy, domestic manufacturing of large pressure vessels has

*Gaia is supposedly the Goddess of Earth. Many radical conservationists believe that extracting anything is contrary to Gaia and makes her angry!

been rendered extinct, polluting industry. At the San Onofre Nuclear Power Station on the coast near San Diego, CA, steam generators were replaced about two years ago in both units. Some people who saw the impressive centipede-like ground transport proudly carrying the banner: Mitsubishi, made in Japan, complained to the local newspaper about Japanese-built steam generators. Why isn’t Edison required to buy American? Answer: there are no American manufacturers left. If the U.S. is to resume building nuclear power plants, which seems far removed at this point, at least in any number, it will have to be Japan, Korea or France to show us how and provide much of the basic hardware.

Today, both units at San Onofre are shut down indefinitely because of accelerated tube wear; “burst tubes releasing radiation to the atmosphere” according to the local newspaper. Surrounding residents are demanding “independent” radiation monitoring and detailed studies of cancer rates. Two local city councils have voted to demand total decommissioning. Too dangerous! Of course these are the same people who accept upward of 40,000 people killed annually on U.S. highways. How many people are killed or even harmed worldwide by the nuclear power industry? Attempting to answer that question leads down a fascinating path. There is such wide variation in estimates of potential deaths from Chernobyl and Fukushima Daiichi that one can only conclude that numbers are so skewed by a political agenda they can’t be trusted. Where have we heard that before?

An illustrative anecdote: During the Three Mile Island hearings in Congress, a demonstration of devices for measuring radiation disclosed that levels in the hearing room due to natural radiation from the granite building were several times higher than worst-case measurements at Three Mile Island. How much radiation exposure do pilots, and passengers for that matter, receive during a long duration flight? How about people living at high altitudes like Denver? Does natural exposure to radiation 24-7 carry less, the same or greater risk than living close to a nuclear power plant? Residents within 50 miles of a nuclear plant continually complain about radiation hazards. Do airline passengers or people living at high altitudes around granite or other naturally radioactive formations think about or even ask the question? There may be a ballot measure in November to shut down California’s two nuclear power plants (the second is Diablo Canyon on the coast near San Luis Obispo) until “permanent storage” for radioactive waste is available. Careful what you wish for – it may just happen.

The idea of a small, “safer” nuclear power plant replacing aging coal fired plants is technically very attractive. However, the issue is not technical but an insurmountable political issue in today’s climate; coal very

bad; nuclear deadly! Chances of nuclear power being resurrected on any scale, small or large, during our lifetimes – slim to none, and Slim has left the building.

Credible Spokespersons

Credibility of technical spokespeople is another hugely important issue that is largely ignored by the technical community. Place an industry PR person with little real technical or operating knowledge in a debate against an expert from a well-funded organization such as Friends of the Earth or the Union of Concerned Scientists, and the result is entirely predictable. I recall watching the news as Three Mile Island unfolded wondering how a major company with so much at stake could have such an inept spokesperson. It was only a little better during Fukushima. For any “suspicious” technology with emotional, well-funded opposition to have a chance at success, the technical community must have an individual with an intellect, personality and speaking ability equivalent to Richard Feynman.

As anyone who has read his biography, watched his lectures and recalls his enormous contribution to the Challenger board of inquiry, Feynman had a unique way of explaining extraordinarily complex scientific and technical concepts in terms that were not only understandable to an average person but led them to conclude correctly that his explanation was truthful. It is total folly to believe that the environmental lobby would acquiesce to replacing an old coal-fired plant with anything carrying the name “nuclear” without a huge, time-consuming and highly expensive fight. Unless the power industry finds someone like Feynman to lead the communications, people listening to an explanation of the many advantages of a Thorium-based MSR (Molten Salt Reactor) won’t get beyond nuclear kills.

Improved Educational Systems

There is also an answer for schools that is impossible politically. First of all we have to recognize that all are not created equal. Some, I’m a prime example, could never have played in the NBA or become a world renowned mathematician or physicist regardless of total commitment, endless study and practice. Others could never gain the skills of a neurosurgeon, play solo piano at Carnegie Hall or write clever computer code. With this in mind, Napoleon had the solution – triage. Applied to schools, there would be three groups:

- Group 1: well-behaved, fast learners who thrive on challenge. This group is pushed ahead as fast and far as their innate curiosity, ability, willingness and commitment will permit.
- Group 2: students with behavior problems. They are placed in an environment of no nonsense or tolerance for misbehavior, with heavy discipline where they are

force fed skills necessary to be a functioning member of society.

- Group 3: the middle group, or average learners with few behavior problems. These students would be provided with a quality learning environment: basics plus courses necessary to move up into the first group and into college if so motivated. Performance moves students up, behavior problems move students down. Realistically, there's no way this will ever happen in a society based on "equality of results" rather than an "equality of opportunity."

While on the subject of education, it would appear that many of today's students are being focused or indoctrinated on all the wrongs of this country rather than our history, the basis, ideas, the Constitution and people who contributed to the greatest nation ever to inhabit the earth.

Can we improve? Of course; however, real improvements are difficult without a full understanding the history of what has


been tried and why, what worked and what didn't, with a solid dose of economics and human nature tossed in to illustrate why most utopian views of what we should be won't work in a practical sense.

Another couple of challenges with higher education: with tuition costs what they are and financial aid increasingly unavailable to the middle class; these students are gradually being frozen out of large universities. Graduating high school seniors with a better than 4.0 GPA, letters in athletics and extra-curricular activities find themselves turned down by many major universities. Why? Because they are from middle-class families and don't contribute to objectives many of these institutions consider highest priority.

Perhaps even more important, many graduates are finding numerous high-priced university undergraduate and graduate degrees essentially worthless when they finally have to get a paying job. Years ago people used to joke that "where to sir," or "how would you like your steak" were the

phrases most uttered by English majors. Recently, one of the OWS (Occupy Wall Street) protesters demanding a job (not work) stated that despite a master's degree in transgender studies, dog walking was the only job that could be found. *Studies* degrees are probably generously subsidized too – but at what cost to society.

If There is a Will? – There is a Way

There are solutions to all these problems. We need more committed, technically trained people capable of using logic to determine a solution to our many challenges and willing to speak up in compelling terms. Technical people must be able to effectively sell concepts and solutions recognizing that when politics is involved logic and facts count for very little; persuasion is everything. The real question is not whether there is a solution to our many ills; but rather, whether there is the will. 

The author can be reached at: johnsmitchell2@gmail.com.