

Guarded Hope for 2009

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I have frequently been asked by *Sound & Vibration* to write the editorial for the January issue. I recognize that this is not due to my great prognostic skills, but that this issue will be in print for the International Modal Analysis Conference (IMAC), where I have been very involved since the conference began more than 25 years ago. Normally, there are enough promising new ideas and emerging areas or activities to reflect upon that my focus can be one of these important future issues rather than the past. While I am sure there is much to look forward to in 2009, most of my current thoughts are still with the last 12 months. This year, my editorial is the exception to my previous pattern, just as much of what occurred in 2008 was the exception to the pattern of the last 15 years or so.

For most of us, the end of 2008 could not come soon enough. I probably speak for most of you when I wish that last January I had some idea of what the year would bring, at least from the economic side of things, with the thought that I could have used the information in some positive way. Just think, if I could have correctly forecast even a small aspect of what happened in 2008 in last year's editorial, we could all be much better off financially at the very least. Unfortunately, that didn't happen for me, or for too many other people, so I don't feel that I missed the signs of the serious events ahead. It was nearly impossible to foretell that we would see a drop in value of the stock market of approximately 40% or a roller coaster ride of gasoline prices up to over \$4 per gallon and then down to about \$1.50 in some parts of the U.S. These are just two data points that indicate that last year was a wild ride that we wish was over but that we fear is not.

I would like to look back, not just at last year, but to events from past years as well, to gain some perspective as to what has happened and what may be in store for 2009 and beyond. Most of my observations are based on the economy, since that is what drives business and the sound and vibration (S&V) community is no exception.

First, I would note that the past year is certainly not the worst economy that I have seen during my professional career. In many ways, both the 1970s and '80s had downturns that in terms of numbers and statistics are much worse than what we have seen so far. The S&V community struggled during those times but managed to move ahead with slower growth for the most part. There were a number of examples of new hardware and software products introduced during those periods that did not receive the attention of the S&V community, due mostly

to a lack of funds or general economic conditions. Good companies failed during those periods, not due to a lack of good ideas or innovation, but because of a poor economy and the bad luck of bringing products to market at an inopportune time. This is likely to happen in the next few months for the same reasons. Companies will try to delay introduction of some new products, but the development costs have already been invested and margins are already too thin to allow this approach to be workable for all concerned.

The second observation about economic downturns of the past, as compared to 2008, is that the amount of information available to enhance our understanding of the events was very limited in the '70s and '80s compared with the present day. Most of the coverage in the past was radio, TV and the print media. Today, we have all of that in addition to the information available via the Internet. We have become accustomed to getting information on a minute-to-minute basis from the Internet. While I generally would consider this a huge positive (more information is better), I am not certain that this is the case. How many of you monitored the Dow Jones Index on a daily, hourly or even more frequently back in August, September and October? The information was interesting, but there was not much that could be done when most financial instruments were moving in a negative direction and the information could not be used to solve the problem at hand. As people attempted to protect their assets and retirement, this just fueled the undamped oscillations of the stock market and began to demonstrate the importance of phase, feedback, open- and closed-loop systems, chaos, fuzzy logic and nonlinear multiple input, multiple output (MIMO) systems. Certainly from a stress point of view, anxiety and personal health, more information was probably not a good thing for most of us.

My next observation about 2008 is that the response to all of this by U.S. politicians and government was not logical, did not follow reasonable common sense and was not consistent. I realize now that the science and technology community as a whole has not taken enough ownership of this part of the problem in the past, but more about that later.

First, the financial experts, most of whom were involved in the poor decision making over the last few years and were complicit in the problem in the first place, provided most of the analyses and recommendations on what should be done. (Does it surprise anyone that the recommendation was to

give the financial community \$700 billion as a starting point for solving the problem?) This is clearly a case of asking the fox to guard the hen house.

Second, the primary response to the problem was to throw this large sum of money at the problem without providing clear guidelines of what was to be accomplished and what accountability would be required.

Third, when the automotive companies asked to be considered for part of the funds, they were treated differently from the financial firms that triggered the problem in the first place. The automotive executives were correctly asked to submit a plan and were told that they were to be monitored to make sure they were making progress. The financial firms were simply given funds with no plan and little oversight. What sort of consistency is this? The ratio of the number of jobs at risk compared to the money requested for the automotive industry was far greater than for the financial industry.

Why would automotive industries who have a tangible product not be given greater consideration than financiers who produce nothing? The probable answer is that the automotive company executives were blamed for not forecasting the problems their industry would undergo when gasoline went to a national average of \$4.10 in July 2008 (even though from January 1998 to January 2008, the price went from \$1.13 per gallon to \$3.37 per gallon without affecting domestic sales severely). Why were the executives of the financial firms not held accountable for failing to recognize the impact that sub-prime lending in the mortgage market would have? This is a complicated problem on both sides, but failure to treat all participants with uniform common sense and accountability is unbelievable.

Finally, the most important observation that I can make is that despite the mistakes that were made and compounded, there is guarded hope for 2009 and beyond. There will be problems to be sure, both overall and in our S&V community, and I do not want to discount that some will be out of work and that personally and professionally we will all be affected.

However, rather than succumbing to the media hype and hysteria, there is much to be positive about. For example, the unemployment rate just went to a 15-year high of 7.2%. This does not even get us back the recession of the 1980s and is nowhere close to the unemployment rate of the 1970s. Remember that 93 percent of the country is employed.

The sub-prime mortgage problem represents only 10 percent of the mortgage money outstanding and, in the big picture, this is

not a problem to the financial stability of the system as a whole. Recognize that the 15- and 30-year, fixed mortgage rates are at 30-to-40-year lows. When I purchased my first home in the 1970s, my 30-year fixed mortgage rate was just under 12 percent, and I was very happy to get that. Hopefully, the reaction of consumers and businesses alike to the problems of the last year will encourage personal and business economic awareness and restraint. The political environment does appear to be changing to a climate that will encourage a reasonable approach to the immediate past problems with a serious note of accountability. Much remains to be seen on this issue.

The lessons that can and should be learned from 2008 are many. Some lessons are little things like recognizing that \$4 per gallon for gasoline is apparently the price point at which consumers in the U.S. will alter their lifestyles (riding public transportation, buying more fuel-efficient vehicles, etc.). Particularly for scientists and engineers that are involved in the S&V community, there two primary lessons that are important and carry very high risk and reward for 2009 and beyond. The first lesson is that with the kinds of problems of the last year come opportunities. The next few years will be full of opportunities as government and business respond to the problems of the ongoing recession. These opportunities will not come without risk, but the entrepreneurial spirit will clearly be rewarded for those who have novel ideas that can be

brought to market as the economy begins to expand. As some businesses decide to downsize their technology areas, qualified and experienced professionals in the S&V community will be available for other businesses that are positioned to move forward. This has always happened in the past and will happen again.

The second lesson is that the S&V community has responsibilities. It needs to become more vocal about what we do, what is important to society and how the problems that society faces can be solved. Sometimes this will involve specific issues, but frequently it will involve applying engineering principles and the scientific method to general technical or societal problems. This requires a greater degree of political activism. I am not advocating that we all go out and run for political office, although this is certainly what more scientists and engineers need to do.

As a group, we have abdicated that responsibility for too long. But I am advocating that every one of us becomes more active in communicating to those who do represent us in the political process. This can be simply attending local community boards, counsels or committees and providing technical, reasoned input. Letters and e-mail to political representatives at all levels is another step in that day-to-day responsibility. Critical and organized thinking is what we have been trained to do as part of our professions. We need to use those skills and to take ownership of the political

process, specifically when it involves possible solutions to specific technical issues but also for general societal problems where those skills can bring clarity to the issues.

When was the last time you wrote your representative at any level to express your thoughts? Did you point out your technical qualifications or basis for your views? I am also advocating that we need to educate the public through individual efforts (representing your profession at Career Day in your local school system, for example) or group efforts connected with your chosen professional society. Recently, the local steel-worker union aired a commercial on local TV stations that explained that they built the buildings and bridges in our community. I have never seen a commercial on a local TV station that explains what engineers do and how they contribute to society. Why not?

Will we learn from the problems we faced in 2008, and will they continue into 2009? Is there reason for guarded hope in this year and beyond? I have always believed that we need to argue passionately about these kinds of issues so that we understand both sides of the problem, but I have always taken the optimistic route. I believe there is reason to look ahead.

I hope this gives you something interesting to think about, and as always, I value your comments. Please feel free to contact me: randall.allemand@uc.edu. 