The Ethics and Politics of Resilience

By David Pierson, S.E.

The concept of Structural Resilience has recently become a hot topic within the structural engineering community. With the establishment of the U.S. Resiliency Council (USRC), structural engineers may have found their version of the U.S. Green Building Council (USGBC). Perhaps, with time, USRC ratings will have significance in the same way Leadership in Energy and Environmental Design (LEED) ratings have some significance for buildings.

The idea is that we should design structures to be more resilient in the face of the natural disasters to which we anticipate they will be exposed. It is proposed that we design buildings to performance objectives higher than the current code mandates.

The present basis of design within the building code is, in general, based on Life Safety. Risk is a part of life, so the establishment of a proper level of risk was required. I don't know how all decisions related to this were made, but here is where we are – most loads are based on a 50- or 100-year recurrence interval, meaning they will (statistically speaking) be exceeded once every 50 or 100 years. Seismic risk is a bit more complicated, involving seismology, geology, fragility curves, etc. But for most of the U.S., the code implies a Life Safety performance objective for a 475-year event.

This seems reasonable since the Constitution of the United States gives the government a role in protecting the lives of the public. Therefore, when we design and build structures that others will enter, it is proper that the government mandate that the design and construction comply with a Life-Safety objective, with risks properly considered.

So, it is natural to ask – should the government impose mandates on private citizens that require higher resilience in privately owned buildings? This question cannot be answered independently of political philosophy. Because among the foremost rights given to American Citizens is the right to own and use property as they see fit, provided they don't infringe on the rights of others.

The conflict arises in part because of the varied interpretations of the "promote the general welfare" clause in the constitution. Those with a more liberal political view argue that this clause gives wide latitude to the government to impose more regulations on property owners given larger societal concerns. Local governments essentially rely on this clause as they enforce zoning regulations, etc. within their communities. Similarly, progressives may wish to impose resilience mandates on property owners based on the "greater good" that may be realized in the event of a disaster.

On the flip side, conservatives argue that free market forces should be adequate to move the construction industry towards resilience. For example, insurance companies are among the best evaluators of risk. If they price insurance commensurate with building resilience, there is a free market force at work. If the perception of risk changes such that the public demands more resilient buildings, then lease rates for those buildings will bring higher profits and building owners will move toward providing such buildings.

Now, if resilience is to be sold on the free market, how ought we to approach this? Are there ethical considerations? This is where it gets a bit thorny.

As educated professionals, society affords us some respect with regards to understanding risks associated with the design of buildings. We are bound, by our code of ethics, to communicate the risks to society in a truthful manner. But, as we enter into this realm of design beyond the current code, there is a new issue that we are faced with. If what we "sell" to the general public (in our attempts to persuade them to have their building designed beyond the building code) will result in additional fees and profit for ourselves, then we are in a precarious situation regarding our ability to remain objective.

There are many ways to present findings when statistical probabilities are involved. Mark Twain said, "There are three kinds of lies – lies, damned lies, and statistics." The reality is that, to make any assertion regarding risks, many assumptions must be made. And so, various people looking at the same data might assess the uncertainties differently and arrive at different conclusions. This is where "truth" might become a bit "blurry".

Risk will always be a part of life. And so, people have different levels of tolerance for risk. Therefore, as we communicate with those whose money must be spent to increase building resiliency, we need to understand that their level of risk tolerance may be different than ours. Wealthy people might have the resources to spend more to reduce risks related to building resiliency. But that doesn't mean they will view that as the best investment of their money. How should we respond if owners do not want to spend more money on their building?

I think that if we are too invested in advocating for resilience, we might tend to overstate the risks, overstate the amount of possible future savings, and undervalue the present value of the money that must be spent. I also fear that we might decide that, since we are so smart, we must protect the general public from themselves and therefore move toward mandating resilience through government force.

As we find ourselves involved in discussions regarding resilience, we must understand the repercussions of advocating for code changes that will increase building performance beyond basic life safety. If we choose to advocate for increased resilience, we must carefully consider whether or not we want it to be brought about through free market forces or government intervention. And if by government intervention, then we must acknowledge that we are advocating for some level of infringement on the rights of American citizens.▪

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