Governing Energy

New Systemic Realities

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In the last edition, we raised the possibility that the risk distribution curve models many use may be fatality flawed. If this argument has merit, then Systemic Risk management as practiced by many have exposures that can lead to unwelcome surprises.

Moreover, in this series as well as other publications we have argued that the **R B C** model has value managing the fluid situations we find ourselves in today.[i] Mathematically, the **R**elationships variable is latent and therefore not directly observable.[ii]

This suggests that the risk frequency distribution is a function of **B**ehavior and/or **C**onditions variables. At the risk of oversimplifying complexity, we can focus on **C**onditions when seeking to reveal the shape of our risk curve. We can make this assumption because **B**ehavior often follows **C**onditions.[iii]

For example, the level of training is a function of **C**onditions. A placard at the former Naval Fighter Weapons School read, "Under pressure, you do not rise to the occasion; rather you sink to your level of training."[iv]

We will need to assess the *sum total* of the **C**onditions *variables* as the foundation of our **I**ndividual **R**isk **P**robability **D**istribution (IRPD). In one sense this makes our task easier since we can eliminate the **B**ehavior set of variables.

However, **C**onditions may include: Circumstances, Capability, Culture and the Environment.[v] For a large project with multiple economic actors and an even higher population of individuals, the resulting **Conditions Matrix** may be large and complex with many elements.

Therefore, a simple Conditions Matrix graphic or table may not be a sufficient method to understand the IRPD. In these cases risk mitigation models may require a set of *difference equations* to better understand the exposures.[vi]

As we have noted that within the industry Culture of Safety, there exists thousands of organization Cultures of Safety; this is true with IRPDs as well.[vii] Moreover, each project may have its own IRPD.

An IRPD may have a "Fat Tail" as described previously.[viii] If this is the case, the risk associated with that particular activity must be addressed differently than if the IRPD has a more statistically Normal Distribution.

Big Data proponents suggest that the data should define the problem. We can argue the same model here.

Let the **C**onditions you find determine the IRPD. You may be surprised that the curve fit with a Normal Distribution is poor. Moreover, guard against statistical techniques that enhance fitness or reduce data fidelity.

For example, if straight line fit is poor in some case an exponential curve will show better data fit.[ix] While the resulting graph may be visually pleasing, it may mask hidden dangers.

In the rush to meet deadlines and financial metrics, we re-purpose materials frequently. Often this business model is satisfactory and the most cost effective. However, each IRPD should be developed on the specific merits (**C**onditions) of that project or activity.

How does your organization address the new systemic risk realities?

About the Author

Dr. Scott M. Shemwell has over 30 years technical and executive management experience primarily in the energy sector. He is the author of five books and has written extensively about the field of operations management. Shemwell is the Managing Director of The Rapid Response Institute, a firm that focuses on providing its customers with solutions enabling operations excellence and regulatory compliance management. He has studied cultural interactions for more than 30 years--his dissertation; *Cross Cultural Negotiations Between Japanese and American Businessmen: A Systems Analysis (Exploratory Study)* is an early peer reviewed manuscript addressing the systemic structure of social relationships.

End Notes

[i] Shemwell, Scott M. (2012, November 19). What a Difference a Year Makes. Governing Energy. PennEnergy.

[ii] _____ (2015). Structural Dynamics: Foundation of Next Generation Management Science. pp. 56, 57. Houston: RRI Publications. http://www.amazon.com/Structural-Dynamics-Foundation-Generation-Management-ebook/dp/B00U0JKMT0

[iii] _____ (1996). Cross Cultural Negotiations between Japanese and American Businessmen: A Systems Analysis, (Exploratory Study). p. 46 Unpublished doctoral dissertation, Nova Southeastern University, Ft. Lauderdale.

[iv] http://www.eremedia.com/tlnt/why-winners-win-in-the-end-its-all-about-the-training

[v] Shemwell, Scott M. (1996). p. 47.

[vi] https://ccrma.stanford.edu/~jos/fp/Difference_Equation_I.html

[vii] Shemwell, Scott M. (2015, April 7). How Can Humans Effectively Manage Increasingly Complex Systems? Deep Space Deep Ocean: Aramco Technology and Operational Excellence Forum. The Woodlands.

[viii] _____ (2012, June 8). Fat Tail. Governing Energy. PennEnergy.

[ix] http://www.qsm.com/faq/poor-curve-fit-actual-defect-data