

## Governing Energy

### Branching Consequences

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Most of us have heard of *unintended consequences*, those causal effects that were not expected. These happen all the time for a number of reasons. Often, the cause and effect relationship is not well understood or it is incorrect.

Moreover, statisticians refer to latent variables as ones that are not directly observable.<sup>i</sup> In other words, some behavioral effects may not be measurable until after the fact. Therefore, it would appear that humankind is doomed to suffer unintended consequences regardless of the level of expertise or planning undertaken.

Process engineers are very familiar with cascading alarm events. For example, a failure/alarm at one part of process manufacturing such as a chemical plant will often result in alarms and automatic process control actions in multiple other parts of the system. Identifying the root cause is often a challenge with alarms of equal priority simultaneously occurring. A robust *Alarm Management Strategy* is required for the safe operations of these plants.<sup>ii</sup>

Geometric or exponential growth or decay rates results in significant changes of statistical populations.<sup>iii</sup> Biological population growth and radioactive decay are examples. When negative events such as an industrial accident or failure in organizational governance, i.e., BP, Enron, and others occur the consequences can rapidly overwhelm management's ability to manage them effectively.

Additionally, it would be a mistake to view this from a linear deterministic system perspective. There are certain Structural Dynamics, defined as the *morphology or patterns of motion toward process equilibrium of interpersonal systems*, at work in any process or system. Systems are actually a combination of multiple sub and often nonlinear systems with varying degrees of integration.<sup>iv</sup>

To name a few, the organizational stakeholder network extends across shareholders, local communities, global competitors and regulatory bodies at all levels of government. This is a subset of nested constituencies that in today's social media environment can be substantial and broad in scope.

Unintended consequences can explode geometrically across the organization's interpersonal systems. They can branch down unanticipated avenues similar to lightning following multiple conductors during a thunderstorm.

Organizational governance models cannot adopt Wac-A-Mole solutions to address branching consequence developments.<sup>v</sup> Modern governance requires an understanding of the firm's Structural Dynamics and develops approaches to rapidly address systems out of equilibrium as a result of an

incident. Additional details about a useful governance model that addresses branching consequences are available in the Changing the Dialogue series monograph, Asset/Equipment Integrity Governance: Operations—Enterprise Alignment.<sup>vi</sup>

## **How has your organization prepared to manage unforeseen branching consequences resulting from an incident?**

### **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 two books and has written extensively about the field of operations management. Shemwell is also the CEO of Knowledge Ops, Inc.; a firm that focuses on providing its customers with solutions enabling operations excellence and regulatory compliance management.

### **End Notes**

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<sup>i</sup> Shemwell, Scott M. (2012, July 2). *The Iceberg Principle*. Governing Energy

<sup>ii</sup> <http://www.emersonprocessxperts.com/articles/ICR/Alarm-Management-Strategy.pdf>

<sup>iii</sup> <http://stats.oecd.org/glossary/detail.asp?ID=6685>

<sup>iv</sup> [http://www.therrinstitute.com/uploads/Structural\\_Dynamics\\_-\\_Version.pdf](http://www.therrinstitute.com/uploads/Structural_Dynamics_-_Version.pdf)

<sup>v</sup> <http://en.wikipedia.org/wiki/Whac-A-Mole>

<sup>vi</sup> [http://www.therrinstitute.com/uploads/Asset\\_Integrity\\_Governance\\_-\\_Ver\\_1.1.pdf](http://www.therrinstitute.com/uploads/Asset_Integrity_Governance_-_Ver_1.1.pdf)