

# THE LAW OF UNINTENDED CONSEQUENCES IS ALIVE AND WELL

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Many times, life observations and experiences are encapsulated in various pithy sayings or adages. For example, every engineering student is introduced early to “Murphy’s Law” which states that “if anything can go wrong, it will go wrong.” This is followed by “O’Toole’s Corollary” which asserts that “Murphy was an optimist.”

While these sayings are somewhat humorous, they seek to capture a very real truth about the perversity of nature and the need to look carefully at primary and secondary factors in a design. While Murphy’s Law does not take a mathematical form, it adds a degree of caution to the design professional’s approach to design and the variability of forces acting on the system.

A similar cautionary note founded in the social sciences is the “Law of Unintended Consequences,” otherwise known as “LUC” (isn’t that an interesting acronym?). In essence, this adage states that unilateral changes in complex, interrelated systems always create unanticipated and, often, undesirable outcomes. As with Murphy’s Law, LUC does not take a mathematical form to allow computation of its effects, but it should inject a degree of humility when tinkering with complex systems. Given the magnitude of the changes occurring in the political, economic and even the climatological realms, it might be worth examining the implications of this concept.

The concept has been around for a long time and probably dates back to 18th century Scottish Enlightenment and the social philosopher and father of capitalism, Adam Smith. In his book *The Wealth of Nations*, Smith describes the unintended consequence of “the invisible hand” creating a global benefit when individuals are free to work for their own self-interest. However, it was Robert Merton, a 20th century sociologist, who proposed the term and performed a systematic analysis of the factors that should be considered to minimize adverse impacts. Many of us are faced with making changes to adapt to a changing world and so it might be helpful to summarize some of the key points of his research to help in our considerations.

Although he spent much of his career developing and cataloging aspects of LUC, his 1936 paper entitled “The Unanticipated Consequences of Purposive Social Action” introduced the topic formally. In a subsequent book, Merton grouped unintended consequences into three general categories:

1. A positive, unexpected benefit.
2. A negative, unexpected detriment.
3. A perverse effect contrary to what was originally intended. (In other words, it had the opposite effect to what was intended.)

A few, quick examples of these categories are as follows. A positive, unexpected benefit of a modified social structure was mentioned previously in Adam Smith’s description of rudiments of capitalism and the societal benefit of self-interest. Another classic sociological description of this category is exhibited in Max Weber’s widely known work relating the Protestant work ethic and modern American capitalism. He noted that the Calvinist doctrines of predestination, orderliness and asceticism had the unintended consequence of creating an environment for capitalism by encouraging the accumulation of capital as a duty or end to itself. Thus, American society developed a base from which investment and efficient use of resources resulted.

Actions resulting in negative, unexpected detriments are ubiquitous. I recall when I began my public health training almost 25 years ago, some of the most depressing lectures that I ever heard had to do with well-intentioned efforts to improve a health outcome, but created other problems of equal or greater magnitude. Case after case was presented to caution against well-meaning, but poorly conceived, plans. One notable example was the creation of the Aswan Dam in Egypt. This large project had the laudable objective of reducing flooding potential of Egyptian farmland, and development of a low-cost hydroelectric power system. The project did meet these objectives; however, the rising, but stable, water level upstream of the dam created a perfect environment for the propagation of the parasite that causes Schistosomiasis. Incidence of Schistosomiasis rose to roughly 40% of the population at one time. Schistosomiasis is a chronic, debilitating disease that, on a global scale, is second only to malaria for adverse socioeconomic impact. Current efforts have reduced that rate tremendously, but it caused significant harm to a generation of Egyptians. It also caused loss of soil nutrients and sediments for farming areas as well as coastal erosion issues which are still being addressed.

The last category - the worst type of unintended consequence - is taking an action to accomplish a specific goal that turns out to have exactly the opposite effect. Unfortunately, this happens more than we would like to admit. A fairly common example occurs in public relations situations where a strenuous effort is made to suppress or remove a piece of information (ex. photograph, document, etc.) from public view. This is especially common on the Internet. The result, though, is that the more strenuous the effort to block the information, the more notoriety and interest is generated. The result is that the information becomes much more widely disseminated than if it had just been left alone.

Dr. Merton studied many examples of the effects and tried to summarize the causes associated with them. Others who have written on the topic have delineated the causes in different ways, but Merton classified them as follows:

1. *Ignorance* (the world and its workings are too complex to know fully).
2. *Error* (incorrect analysis of the issue results in wrong or incomplete action).
3. *Immediate interest* (short-term goals and long-term goals may not be compatible).
4. *Basic values* (certain laws, morals, or beliefs may dictate a specific course of action even if the long-term effect is unfavorable...which may, in turn, force a change in the laws, morals or beliefs).
5. *Self-defeating prophecies* (the mere prediction or fear of a consequence may force an action that was unnecessary or erroneous because the non-occurrence of the situation was never considered).

Considering these causes highlights the fact that fears, beliefs, and limitations in knowledge and analysis play a major role in our decisions...and many times the unintended outcomes that result. Still, each of us face uncertainty and change in our daily lives. Decisions must be made. Even the choice not to make a change is a decision, which carries its own consequences. So, how do we use the LUC to make better decisions?

As with Murphy's Law, the Law of Unintended Consequences should be used to create a mental framework that recognizes uncertainty and complexity in the world. Uncertainty and complexity in some fashion are part and parcel of all we do in human life, so it can't be avoided. Change is an inherent part of life as well, so decisions must be made. Consideration of alternatives and mitigating factors should be considered if time allows. It is always important to understand that decisions we make can affect others as well. Certainly, this is the case as we look at some of the broad-sweeping social policy debates that are occurring (as with the Aswan Dam illustration). So, there actually can be an ethical component to be considered in this context as well.

In his excellent essay "The Unanticipated Consequences of Technology," Professor Tim Healy of Santa Clara University explores some of the implications of burgeoning technology and its implications for societal good (or not). In the end, he presents six cautionary notes that are worth considering.

1. Life is complex, more so than we admit.
2. All of our actions have unanticipated consequences.
3. We bear a moral obligation to take our positions tentatively and with humility in light of our ignorance.
4. Short-term and long-term values are often different and often contradictory.
5. Uncertainty can be reduced, but there is always a cost.
6. It is desirable to reduce uncertainty, but not eliminate it. (Earlier in his essay he notes that each step in reduction of uncertainty results in a corresponding loss of some level of freedom.)

Thus, he notes that we have the right to act, but we also have an obligation to accept some level of responsibility for the unanticipated consequences of our actions. Perhaps the Wall Street financiers who developed and peddled the products that created the sub-prime mortgage crisis should have read his article. However, that assumes a moral and ethical constraint exists in that business...which has yet to be demonstrated.

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