

## ***Why Things Bite Back: Technology & the Revenge of Unintended Consequences*** **by Edward Tenner**

New York: Alfred A. Knopf, 1996).

Reviewed by David W. Gill [www.ethixbiz.com](http://www.ethixbiz.com)

Edward Tenner's *Why Things Bite Back* examines technology in medicine, agriculture and the environment, the computerized office, and sports. A historian of science at Princeton University, Tenner has provided a voluminously documented and illustrated account of the unintended consequences (called "revenge effects") of our technologies. "Technology demands more, not less, human work to function. And it introduces more subtle and insidious problems to replace acute ones. Nor are the acute ones eliminated. . . [I]n controlling the catastrophic problems we are exposing ourselves to even more elusive chronic ones that are even harder to address. . . . Our greater safety demands more and more vigilance. . . . I am not arguing against change, but for a modest, tentative, and skeptical acceptance of it" (p. xi).

A revenge effect is when a technology produces a result the opposite of what was intended. For example, "when a safety system encourages enough additional risk-taking that it helps cause accidents, that is a revenge effect"(p. 19). Football helmets and protective gear are a case in point. Smoke alarms that make people less vigilant in preventing fires are another. Decentralizing work from the office to a home work station often leads to greater captivity to work rather than greater freedom. Going to the hospital to get well can expose one to more disease than staying away. Intensive use of antibiotics has promoted the development of more resistant viruses. "If we learn from revenge effects we will not be led to renounce technology, but we will instead refine it: watching for unforeseen problems, managing what we know are limited strengths, applying no less but also no more than is really needed" (p. 115).

In the office, Tenner describes revenge effects on the body as well as on the bottom line: repetitive motion injuries (e.g., carpal tunnel syndrome), back injuries from being seated so long before terminals, eyestrain, and the unknown impact of electro-magnetic field exposure. The financial issue is that net productivity is relatively unchanged: the cost of technical support personnel, for example, erodes the savings from downsizing the regular staff. Instead of resulting in paper-less offices, computerized workplaces use far more paper because of the ease of cranking out revised documents.

Tenner's book is dense with examples of revenge effects; his case is made with overwhelming evidence. The obvious point of his book is that we must face up to the truth of our technologies: there are serious consequences, negative as well as positive. The negative impacts of our technologies are not restricted to their uses made by evil people! Often the consequences are entirely unforeseen (though if we were more realistic and careful we might be able to foresee more than we do). Tenner suggests that we need more "finesse" in the development and application of technology---the capacity to move with moderation and with attention to the environment of application. He also urges "vigilance"; the introduction of technology requires more intense and sustained care, not less (the myth says that technology is more reliable than humans, that it frees us from hard work, etc.).