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## What Technology Wants

By Kevin Kelly

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### ...Chapter 12. Seeking Conviviality

If we examine technologies honestly, each one has its faults as well as its virtues. There are no technologies without vices and none that are neutral. The consequences of a technology expand with its disruptive nature. Powerful technologies will be powerful in both directions—for good and bad. There is no powerfully constructive technology that is not also powerfully destructive in another direction, just as there is no great idea that cannot be greatly perverted for great harm. After all, the most beautiful human mind is still capable of murderous ideas. Indeed, an invention or idea is not really tremendous unless it can be tremendously abused. This should be the first law of technological expectation: The greater the promise of a new technology, the greater its potential for harm as well. That's also true for new beloved technologies such the internet search engine, hypertext, and the web. These immensely powerful inventions have unleashed a level of creativity not seen since the Renaissance, but when (not if) they are abused, their ability to track and anticipate individual behavior will be awful. If a new technology is likely to birth a never-before-seen benefit, it will also likely birth a never-before-seen problem.

**The obvious remedy for this dilemma is to expect the worst. That's the result of a commonly used approach to new technologies called the Precautionary Principle.**

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The Precautionary Principle was first crafted at the 1992 Earth Summit as part of the Rio Declaration. In its original form it advised that a "lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." (pp. 246-247) **In other words, even if you can't prove scientifically that harm is happening, this uncertainty should not prevent you from stopping the suspected harm. This principle of precaution has undergone many revisions and variations in the years since and has become more prohibitive over time.**

**A recent version states: "Activities that present an uncertain potential for significant harm should be prohibited unless the proponent of the activity shows that it presents no appreciable risk of harm."**

**One version or another of the Precautionary Principle informs legislation in the European Union (it is included in the Maastricht Treaty) and appears in the United Nations Framework Convention on Climate Change. The U.S. Environmental Protection Agency (EPA) and Clean Air Act rely on the approach in establishing pollution control levels. The principle is also written into parts of the municipal codes of green cities such as Portland, Oregon, and San Francisco.** It is a favorite standard for bioethicists and critics of rapid technological adoption.

**All versions of the Precautionary Principle hold this axiom in common: A technology must be shown to do no harm before it is embraced. It must be proven to be safe before it is disseminated. If it cannot be proven safe, it should be prohibited, curtailed, modified, junked, or ignored. In other words, the first response to a new idea should be inaction until its safety is established. When an innovation appears, we should pause. Only after a new technology has been deemed okay by the certainty of science should we try to live with it.**

On the surface, this approach seems reasonable and prudent. Harm must be anticipated and preempted. Better safe than sorry. Unfortunately, the Precautionary Principle works better in theory than in practice. **"The precautionary principle is very, very good for one thing—stopping technological progress,"** says philosopher and consultant Max More. Cass R. Sunstein, who devoted a book to debunking the principle, says, **"We must challenge the Precautionary Principle not because it leads in bad directions, but because read for all it is worth, it leads in no direction at all."**(p. 247) **Every good produces harm somewhere, so by the strict logic of an absolute Precautionary Principle no technologies would be permitted.** (pp. 247-248) **Even a more liberal version would not permit new technologies in a timely manner.** Whatever the theory, as a practical matter we are unable to address all risks, independent of their low probability, while efforts to address all improbable risks hinders more likely potential benefits.

**For example, malaria infects 300 million to 500 million people worldwide, causing 2 million deaths per year. It is debilitating to those who don't die and leads to cyclic poverty. But in the 1950s the level of malaria was reduced by 70 percent by spraying the insecticide DDT around the insides of homes. DDT was so successful as an insecticide that farmers eagerly sprayed it by the tons**

on cotton fields—and the molecule's by-products made their way into the water cycle and eventually into fat cells in animals. Biologists blamed it for a drop in reproduction rates for some predatory birds, as well as local die-offs in some fish and aquatic life species. Its use and manufacture were banned in the United States in 1972. Other countries followed suit. Without DDT spraying, however, malaria cases in Asia and Africa began to rise again to deadly pre-1950s levels. Plans to reintroduce programs for household spraying in malarial Africa were blocked by the World Bank and other aid agencies, who refused to fund them. A treaty signed in 1991 by 91 countries and the EU agreed to phase out DDT altogether. They were relying on the precautionary principle: DDT was probably bad; better safe than sorry. In fact DDT had never been shown to hurt humans, and the environmental harm from the miniscule amounts of DDT applied in homes had not been measured. But nobody could prove it did not cause harm, despite its proven ability to do good.

(p. 248)

### ...Source Notes

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...[p.] 247 **“to prevent environmental degradation”**: United Nations Environment Program. (1992) “Rio Declaration on Environment and Development.” Rio de Janeiro: United Nations Environment Program.  
<http://www.unep.org/Documents.multilingual/Default.asp?DocumentID=78&ArticleID=1163>.

[p.] 247 such as Portland, Oregon, and San Francisco: Lawrence A. Kogan. (2008) **“The Extra-WTO Precautionary Principle: One European ‘Fashion’ Export the United States Can Do Without”**. Temple Political & Civil Rights Law Review, 17(2). P. 497.  
<http://www.itssd.org/Kogan%2017%5B1%5D.2.pdf>.

[p.] 247 **“it leads in no direction at all”**: Cass Sunstein. (2005) *Laws of Fear: Beyond the Precautionary Principle*. Cambridge: Cambridge University Press, p. 14.

[p.] 248 **DDT around the insides of homes: Lawrence Kogan. (2004) “‘Enlightened’ Environmentalism or Disguised Protectionism? Assessing the Impact of EU Precaution-Based Standards on Developing Countries,” p. 17.**  
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