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ARTICLE in INTERNATIONAL JOURNAL OF TECHNOETHICS · APRIL 2010

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Technology Traps: Who Is Responsible?

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ABSTRACT

Technologies can have harmful effects on users' psychological health, on society, and on the environment. "Technology traps" arise when users and societies become stuck with technologies and the harmful consequences produced by these technologies. In this paper, the authors describe five technology traps: incompetence, self-miscontrol, misbehavior, techno-centrism, and environmental degradation. The authors then examine the share of ethical responsibility for these traps among end-users, businesses, and government.

Keywords: Business Ethics, Deskilling, Environmental Degradation, Internet Addiction, Psychology of Technology, Social Traps

TECHNOLOGY TRAPS: WHO IS RESPONSIBLE?

Technologies are often ambivalent to the wellbeing of users and society. Despite the many benefits modern technologies have conferred on the human species, there are also costs in the form of undesirable or unexpected consequences (Ellul, 1954,1964; Perrow, 1984; Sarason, 1984; Tenner, 1996). When societies adopt technologies that produce undesirable consequences that are difficult to separate from the benefits, situations arise that resemble what Platt (1973) called *social traps*: "traps formally like a fish trap, where men or organizations or whole societies get themselves started in some direction or some set of relationships that later prove to be unpleasant or lethal and that they

DOI: 10.4018/jt.2010040103

see no easy way to back out of or avoid" (p. 641). In this article, we examine a subspecies of social traps we call *technology traps*, characterized by the use of technologies that provide immediate benefits but that pose unavoidable longer-term costs to the well-being of individual users, society, and the planet. We describe five technology traps that plague modern society and then examine the issue of attributing responsibility for these traps.

To illustrate what we mean by technology traps, we consider cellular or mobile telephones. The perceived benefits of cell phones (mobility, immediate communication access) are accompanied by numerous costs. Cell phones cause disruptive ringing and intrusive conversations in public and in the workplace (Monk et al., 2004); they can increase the risk of having a motor vehicle accident by more than 500% (Violanti, 1998); among teenagers, they can promote addictive behavior (Baldacci, 2006), codependency (Gross, 1999), disruptions in schools (Chaker, 2007), and assault, robbery, and homicide (Leo, 2006); they have been used for taking privacy-invasive "upskirting" and "downblousing" photographs (Gostomski, 2005); they have been used to detonate roadside bombs in war zones (Cloud, 2005); they have led to the demise of the public pay telephone, thus reducing telephone access for people who do not use cell phones (Maurstad, 2003); and cell phone technology mars landscapes with unattractive transmitter towers (Brunsman, 2006) that kill millions of birds annually (Woodall, 2002). As long as cell phones are considered "standard equipment," individuals and society will be stuck with these undesirable side-effects. That is the essential character of technology traps.

FIVE TECHNOLOGY TRAPS

The Incompetence Trap

When technologies do what people could do themselves, there is little or no opportunity or incentive for people to learn and maintain the skills that the technologies embody. Thus, such technologies can "deskill" users, rob them of manual and cognitive skills, erode self-efficacy (i.e., beliefs that one can successfully perform a task), and increase dependence on tools and technical experts (Kipnis, 1991).

Everyday life is filled with technologies that take over skills that people could master themselves. For example, alarm clocks automate the task of awakening at a target time, with the result that users feel incompetent at self-awakening and are completely dependent on the devices (Crabb, 2003). Use of automatic cameras similarly robs people of opportunities to develop photographic skills, and routine use of ready-to-eat foods prevents people from learning how to cook (Stern & Kipnis, 1993).

The transfer of skills and self-efficacy from person to machine has a variety of costs. The routine use of electronic calculators to solve math problems results in more negative moods, decreased motivation, and more negative attitudes toward math than doing math problems with paper and pencil (Stern, Alderfer, & Cienkowski, 1998). In industrial settings, automation often creates conditions that are less satisfying and more tedious than skilled manual work (Blauner, 1964; Chadwick-Jones, 1969; Persson et al., 2003).

Technical knowledge and skills themselves become trivialized by automated technologies that only require that users know the proper sequence of pushing buttons (Fromm, 1955; Shaffer, 1981; Skinner, 1986). People do not understand how everyday technologies work (Bandura, 1995), and all that is required is that they know how to use the device and when it is time to throw it away.

The Self-Miscontrol Trap

Modern automated technologies make it unnecessary and often undesirable for human users to exercise control over their own behavior. One consequence of this is that users may experience a failure of self-control when their behavior is controlled by technological devices rather than by social norms, considerations of health, or even laws (Carver & Scheier, 1981).

Many technologies elicit failures of selfcontrol that strongly resemble addictions. College teachers are acutely aware of students' addiction to cell phones: students have great difficulty keeping their hands and eyes off their phones, and the first thing they do when classes let out is make calls or check for messages. Internet addiction also appears to be widespread (Young, 2004), and may sometimes involve compulsive sexual addiction (Stern & Handel, 2001). Other technologies that promote addictive behavior include television (McIlwraith et al., 1991), remote control devices (Ferguson, 1994), stereos and digital audio players (Florentine et al., 1998), and even motor vehicles (Reser, 1980).

Multitasking-performing more than one technological operation at the same time-is an extreme failure of self-control that has become routine as consumer toolkits expand in size.

While doing homework, students simultaneously listen to music, watch television, surf the Internet, email, and text-message (Aratani, 2007). Not only does talking on cell phones while driving increase the risk of accident, but compact disk players, onboard computers, GPS systems, and even televisions compete for drivers' attention and self control, with potentially tragic consequences.

The Misbehavior Trap

Many technologies encourage intentional behavior that conflicts with established social norms, rules, and laws (Crabb, 1996a; Marx, 1994). Email encourages hostile *flaming* (Kiesler, Siegel, & McGuire, 1984). The Internet makes it possible for 24/7 deployment of computer viruses, spam, and fraudulent scams (Furnell, 2002). Video cameras encourage voyeurism and exhibitionism (Crabb, 1996b). Caller ID makes "telephone stalking" possible (Case, 2000). Misbehavior in the form of aggression is also facilitated by many technologies. The mere presence of weapons has been found to arouse thoughts of violence (Berkowitz, 1993).

Ownership of guns is positively correlated with homicide rates (Duggan, 2001), and aggressive fantasies almost always include thoughts about weapons (Crabb, 2000, 2005). Weapons themselves play a significant role in structuring aggressive thoughts and motivating violent behavior. Even technologies that are not intended to be used for aggressive purposes nonetheless can be used as weapons: motor vehicles are commonly used as instruments of aggression (James & Nahl, 2000), and the Internet and text messaging can facilitate teenage bullying (Harmon, 2004) as well as hate crimes (Glaser, Dixit, & Green, 2002).

The Techno-Centrism Trap

Because modern technologies reliably perform tasks with a minimum of effort and skill, people come to trust, depend on, and even have affection for technologies (Dzindolet, Pierce, Beck, & Dawe, 2002; LaFrance, 1996; Muir, 1994; Skitka, Mosier, & Burdick, 2000).

Excessive positive regard for technologies can inadvertently lead to the erosion of trust and regard for other people (Kipnis, 1984; Stern, 1999; Stern, Mullennix, & Wilson, 2002) and can create a culture in which technology is valued above all else. Excessive trust of technologies and distrust of humans is epitomized by surveillance technologies. The very presence of surveillance cameras and computer monitoring systems unambiguously signals an absence of trust, and the activity of surveillance itself induces distrust of those who are under surveillance (Strickland, 1958). As businesses increase monitoring of employees and customers and governments expand surveillance of citizens, the predictable outcome will be greater distrust, prompting a spiral of yet more surveillance and other measures of social control.

The Environmental Degradation Trap

Technologies since the dawn of the Industrial Revolution have spawned all of the environmental problems of our time: pollution of the air, water, and soil, global warming, depletion of the ozone layer, deforestation, species extinction, and human overpopulation. Coupled with the ideologies and practice of capitalism and unlimited growth, continuing dependence on unsustainable technologies is fouling the planetary nest and risking unprecedented global catastrophe.

At the level of individual behavior, the convenience offered by many technologies often obscures inefficiencies and other environmental harms. Technologies that use remote control devices, such as televisions, stereos, and garage door openers, are always "on" so that they may be ready to receive commands, yet these technologies give no indication that they are consuming electricity. As a result, they waste as much as 10% of all electricity consumed (European Commission, 2005). To generate that extra electricity, enormous amounts of

greenhouse gases and nuclear waste must be produced.

Attempts to mitigate obvious technologyinduced environmental problems typically use more technology. One such "technofix" is waste recycling programs, which consume more energy and generate more pollution than if the recycled materials were simply discarded in landfills (Crabb, 1992). Rather than addressing the primary problem of overproduction and overconsumption of nonessential products (e.g., billions of plastic bottles of Coca-Cola), recycling serves as a pseudopalliative that institutionalizes polluting practices and entraps society in an unsustainable way of life.

Awareness of the adverse impacts of technological activities on the environment is itself subject to entrapment. Many children spend their young lives isolated indoors with the technologies of child-rearing: television, video games, and the Internet (Louv, 2005). Those technologies offer contrived experiences that divert attention away from the natural world. As "screen time" replaces "green time," children will fail to develop an understanding and appreciation of the natural environment. As adults, they will probably not care about the harmful impact of their technological activities on the quality of their own lives and the lives of future generations.

WHO IS RESPONSIBLE?

The five technology traps we have described by no means exhaust the myriad troubles humans can get into with technology. Our point has been to suggest that the use of many technologies can result in more or less intractable harms to individual psychological functioning, to society, and to the planet. We suggest that these harms are predictable and avoidable, and therefore that they constitute violations of ethical conduct. But who is responsible for this unethical behavior?

End-users obviously share a portion of responsibility for the harms caused by their technological activities insofar as those activities are voluntary. However, there are two respects in which everyday technological activities of users are *not* wholly voluntary.

First, technologies themselves can compel people to use them. By virtue of their design and function, technologies exert control over users' motivational processes. One can conceive of cell phones, for example, as reinforcement machines that periodically make users feel good when they receive calls or text messages. Those good feelings ensure the phone will be used again and again, often to compulsive extremes. In this way, much of the technological activity seen today is largely involuntary and parasitically feeds on basic human psychological mechanisms. It would be less accurate to claim that end-users freely choose to do what they do with their various gadgets, and more accurate to acknowledge the coercive structuration of users' behavior by the technological milieu.

Second, modern technological devices are not natural features of the landscape in which the human species evolved, but rather are humanmade objects that are "arbitrary" to the natural world (Ellul, 1954/1964). Decisions to design, manufacture, and market technological devices are made in executive suites of corporations and implemented by engineers and product designers. The very appearance of technologies in the home, at work, and in public spaces is not under the control of end-users. In many instances end-users have no choice but to use the technologies that are imposed on them. In a very real sense, industry not only manufactures the technologies that people use, but also the social norms that govern people's lives.

For these reasons, we conclude that endusers bear only a small portion of responsibility for the harms produced by their own technological activities. End-users may be considered responsible when they know that they can choose not to use harmful technologies but they intentionally use them anyway, for example, when driving a motor vehicle "just for fun." This leaves two other possible sources of responsibility for technology traps: businesses and government.

Businesses not only design, manufacture, and market technologies; they profit from

them. The first responsibility of businesses is to produce an acceptable return on owners' investments. However, if the pursuit of profits results in harm to customers, society, or the environment, then businesses should be held accountable for violating their ethical responsibilities to "do no harm" (Carroll, 1991). Of course, businesses would have to be aware that their technological products cause harm, which they may not be unless customer complaints or lawsuits reach a threshold that threatens profitability. Ideally, producers of technologies should perform "safety research" that would detect potential harms before technologies are released to the marketplace. If a technology is found to have harmful effects, businesses would be obliged to redesign the product or abandon it altogether. In the absence of such checks, businesses that produce harmful technologies fail to live up to their ethical responsibilities to society.

Because it is unlikely that technology producers will voluntarily perform costly safety research (Bakan, 2004), government should take a leading role in encouraging product testing for potentially harmful effects. This is especially important in light of the complex and enduring nature of technology traps. Platt (1973) advocated just such a super-ordinate authority to alleviate social traps. Gate-keeping government agencies should either mandate safety research by technology producers or conduct such research itself (Hogan, 1983). In the U.S., Congress's Office of Technology Assessment (OTA) played this role (Saxe & Dougherty, 1985) for 23 years before funding for the OTA was discontinued by a Republican-controlled Congress in 1995 (Office of Technology Assessment, 1996). It seems clear that government leadership on assessing potential harms of technologies would serve as an appropriate corrective to the ethical blindness that can afflict businesses as they pursue profitability.

CONCLUSION

In this paper we have described the phenomenon of technology traps. The burden of ethical responsibility for these technology traps generally rests with businesses that produce harmful technologies, and also with government when it fails to assess and regulate such technologies. Whether businesses and government will accept responsibility for technological harm remains to be seen. History shows that societies are not incapable of making poor choices about how to manage their way of life (Diamond, 2005).

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