

## **Planned Obsolescence in Technology: Is it ethical?**

### **Introduction & Thesis**

The year 1924 saw the birth of a strategy that would radically change the consumer market for many decades to come. A group of manufacturers, consisting of General Electric, Philips, Osram, and numerous smaller companies, conspired to corner the incandescent light bulb market. Their so-called alliance, known as the Phoebus Cartel, operated from its headquarters in Switzerland. Since the cartel members already produced high quality, long-lasting light bulbs than their competitors, they collectively devised a new strategy to sell their products. Members of the cartel agreed to set the total burning time of the light bulb to 1,000 hours, a 50% reduction of its original lifespan (Krajewski, 2014). The cartel charged a hefty fine to any company that produced light bulbs with an average life expectancy greater than the agreed-upon amount. While the scheme was successful for almost two decades, the emergence of independent manufacturing groups based in Northern Europe and Japan hampered the Phoebus Cartel's efforts of controlling the market by introducing cheaper and longer-lasting light bulbs. The onset of World War II in 1939 interfered with the cartel's operations and ultimately led to its demise.

The strategy employed by the Phoebus Cartel in the 1920s was revolutionary in scope and is referred today by the term *planned obsolescence*. By setting an expiration date for a particular good, the cartel sought to maximize its profit margins by encouraging repetitive consumption from the customer. This marketing technique is prevalent in contemporary society, which can be seen in the yearly-changing trends in fashion and even stretching into the industries of automobile manufacturing, software development, and electronics. In his social critique *Made to Break: Technology and Obsolescence in America*, Giles Slade (2006) formally defines

planned obsolescence as the “assortment of techniques used to artificially limit the durability of a manufactured good” (p. 8). Whether this practice is ethical remains the main contention of this paper, which will focus primarily on planned obsolescence occurring in the electronics and software industries. An historical overview of planned obsolescence in the United States will first be presented in order to set the overall tone of the paper, which will be followed by examples from the previously mentioned industries. Next, the framework used to evaluate the ethical dimension of the practice will rely on arguments derived from economics, and hence a series of utilitarian arguments will be presented. This paper will also provide an analysis from a Kantian perspective, weighing the merits and controversies of planned obsolescence before making a moral judgment on the issue.

### **History of Planned Obsolescence in the United States**

Around the same decade the Phoebus Cartel rose to prominence as the de facto manufacturer of “quality” light bulbs, General Motors introduced stylistic changes to the 1923 Chevrolet (Slade, 2006, p. 36). Alfred Sloan, the CEO of GM at the time, asked his engineers to overhaul the design of the car in order to stay competitive with its rival, the Model T. By lengthening the hood and rounding the car’s edges, GM altered the 1923 Chevrolet to imitate the style seen in luxury cars of the time. The strategy of making annual modifications to car models was an immediate success, which persists to this day in the automobile industry. However, this victory was short-lived since a mere six years later, the Great Depression brought hard times for citizens and corporations alike as both manufacturing output and consumer spending dwindled to a halt. In 1932, Bernard London, a real estate agent in New York, coined the term *planned obsolescence* in his publication *Ending the Depression Through Planned Obsolescence*. He

observed that people were disobeying the “law of obsolescence” by using products – cars, tires, clothing, and radios – for much longer than before the Depression (London, 1932, p. 2). He claimed that it was “cheaper to destroy useless and obsolete goods now” instead of using outdated methods to fight the Depression, which were demoralizing the American people (p. 7).

London’s notion of product disposability manifested itself in the post-WWII years, when economic conditions had already stabilized in the United States. The introduction of Japanese transistor radios in the 1950s altered the landscape of consumer electronics. These new devices with their miniature circuit boards replaced older radios, which were connected by bulky vacuum tubes. The small, brittle parts composing the Japanese transistor radios made repair difficult to the point where buying another radio set was often cheaper (Slade, 2006, p. 106-107). By reducing costs and encouraging repetitive consumption, transistor radios made vacuum tube radios obsolete, not through deliberate means but through innovation, a process known as *technological obsolescence*. The invention of the integrated circuit in 1958 introduced more opportunities for tech companies to market their creations. In 1965, businessman and engineer Gordon Moore observed a trend in the complexity of integrated circuits and published a paper remarking that the number of transistors in these circuits doubled approximately every two years (p. 196). Computer chip manufacturers such as Intel understood the implications of Moore’s law. As a result of the exponential growth of computing capability, the process of gradual improvement drives repetitive consumption as consumers today seek to own the most powerful, up-to-date gadgets that their money can buy. Modern day electronics that benefit from the consequences implied by Moore’s law include LCDs, printers, cameras, cell phones, and gaming consoles (Bartels, 2012, p. 11). Hence, companies involved in their manufacturing and

distribution have great incentives to program obsolescence into their products, whether it be to increase yearly profits or, in a nobler sense, to serve as catalysts for technological change.

### **Planned Obsolescence in Electronics**

Product obsolescence has far-reaching effects in the electronics industry. With the case of its computer chips, Intel often begins research and development on creating the next generation of chips before marketing the previous one (Slade, 2006, p. 200). This approach seems prudent, as chips have become more durable over the years but only to become obsolete through Moore's law. This accelerating pace of technological improvement in the electronics industry has an apparent consequence: Consumers, from average users to tech enthusiasts, are much more eager to wait in line for the next big machine, faster and more powerful than that of its predecessors.

Besides relying on the natural process of technological obsolescence, companies have introduced other means to increase repetitive consumption of their products. Apple has made repair a hassle with hardware locks designed to restrict users from disassembling their devices (Aladeojebi, 2013). The use of proprietary screws in the MacBook Pro has also prevented users from opening and repairing it themselves. Furthermore, some laptops come with retina displays that offer no glass protection, so any damage to the screen is extremely costly and may require the purchase of a new laptop. By limiting the ability to remedy problems that people may encounter, Apple has control over the lifespans of their devices, which can be adjusted to influence projected sales or to coincide with a major release. What appears to be an inconvenience for users is an excellent opportunity for Apple to make a profit.

Manufacturers design inkjet cartridges to last for a fixed amount of use. In his paper, Aladeojebi (2013) references a study conducted by Epson, which found that "60% of ink

cartridges go to waste; ink efficiency for printing photos is 50% and 47% for documents.” Built-in smart chips detect when ink levels are low, but not depleted, and refuse to print until the cartridge is refilled. While methods of circumventing these checks exist, their mere presence is indicative of planned obsolescence. Ink jet printers are often cheap, but the cost of refilling cartridge may be just as expensive as the cost of a new printer.

As the previous examples with computer chips, Apple devices, and inkjet cartridges have demonstrated, the deliberate obsolescence of goods has clear implications. In a culture that is apt to consume, this marketing approach has encouraged premature product disposal, fueling the desire to buy more. It does not come as a surprise that planned obsolescence has had such a lasting impact on the electronics industry.

### **Planned Obsolescence in Software**

Iterative and incremental development philosophies, such as SCRUM and Agile, have led to software that is highly flexible to user demands. While the robustness of software systems has improved over the years, they still remain susceptible to abandonment, discontinued support, and a slew of other strategic management procedures in an effort to shorten product lifespans.

Software obsolescence differs from obsolescence in electronics; however, many corporations share the underlying intent for its continued use. In one interview, Microsoft founder Bill Gates made the following remark about business, “The only way big companies that succeed will be those that obsolete their own products before someone else does” (Bartels, 2012, p. 29).

This sentiment of “self obsolescence” expressed by Gates drives many of the tactics used in proprietary software. Versioning and vendor lock-ins are strategies employed to give greater control to corporations and keep the customer dependent on their services. For instance, Apple

frequently releases new firmware upgrades for the iOS and discontinues support for outdated versions, in an effort to encourage customers to buy the latest device that supports these new features (Keeble et al., 2013). In a show of opposition, measures to counter the threat of planned obsolescence in software have emerged. Discussed in a paper by Nyman and Lindman (2013), these communities are dedicated to sustainable efforts to overcome planned obsolescence by maintaining open source software projects. They argue that the nature of free and open-source software allows abandoned projects to be revived, and old projects to be improved.

### **Economic Arguments in Favor of Planned Obsolescence**

Consumer products, such as laptops, cars, cell phones, and television sets, form a class of goods known as *durable goods*. A durable good is a long-lasting good that can be used repeatedly, in contrast to a perishable good, which is often consumed after a single use (Orbach, 2004). In his paper, Orbach emphasizes a common dilemma faced by durable-goods vendors: Demand for the durable good diminishes over time because the good is unlikely to need frequent replacement, since the consumer may reuse it. As profits decline for these vendors, they begin to lack the resources to put forth innovative ideas and remain competitive. In order to exert market power, companies have devised certain strategies to overcome this problem. In particular, Orbach acknowledges that planned obsolescence seeks to convince consumers to replace an old product with a new one. However, for this strategy to be economically viable, the manufacturer must either own a monopoly over the product or, at the least, be part of an oligopoly.

For those that might debate the lawfulness of planned obsolescence because it encourages trust-forming tendencies, Michael Waldman, an economics professor at Cornell University, presents an argument from a monopolist's point of view. In his paper *A New Perspective on*

*Planned Obsolescence*, Waldman (1993) contends that the economic incentive is “too high” for monopolists to forgo the practice. A mathematical proof is used to demonstrate that the durable goods monopolist is motivated to obsolesce old products with new ones, even when doing so is not socially optimal. A summarized version of the proof states that firms will not internalize current behaviors because they do not affect units of a good previously sold. In a monopoly, the firm is only in competition with itself during consecutive time periods. Hence from a private and social welfare standpoint, the firm is better off practicing planned obsolescence, regardless of its effects on consumer happiness.

In a different paper, economists Grout and Park (2005) argue that in certain cases, planned obsolescence is necessary for the firm’s survival in the competitive market. Their proposed model assumes firms design products that withhold some attributes, and consumers are willing to trade in old goods for new goods. By combining planned obsolescence with efficient buyback procedures, producers may minimize the flooding of low-quality, used goods in secondhand markets. Firms employ planned obsolescence strategies in order to minimize the “lemons” problem. First described in a paper by Akerlof (1970), the “lemons” problem occurs because sellers are more likely to trade in low-quality goods than high-quality ones. The result is that the buyers will pay more for goods misleadingly advertised as high quality because the true quality is unclear and only apparent to the seller. This uncertainty also causes higher quality goods to depreciate in value, which leads owners to withhold these goods from the market. Planned obsolescence, as described here, eliminates the possibility of driving out good business by reducing the number of secondhand markets. Opponents of planned obsolescence may then retort that withholding features from the customer is deceitful, but others argue that compelling customers to replace their old products generates sales in the long run. Studies have shown that

consumer perception of a product's quality tends to increase if frequent repurchases are required and if incremental improvements to the product are apparent to the purchaser (Aladeojebi, 2013).

With these motives in mind, firms may have good reasons, whether for profitability or survival, to support the continuation of planned obsolescence.

### **Economic Arguments against Planned Obsolescence**

Businesses often rely on the principle of information asymmetry to market their goods. Discussed in Akerlof's (1970) paper *A Market for Lemons*, information asymmetry arises when one side has more knowledge about the good than the other. Such a difference in information provides an unfair advantage to the more knowledgeable side. In the case of planned obsolescence, manufacturers have private information about the quality of materials in their goods. In an effort to cut costs and generate new revenue, they may gradually deteriorate the product's quality until the product becomes obsolete. Supporters of this practice may dispute that not all manufacturers have such cynical intentions as just described. Furthermore, if this problem occurs, it can be solved with branding. A brand name often signals quality to customers and allows them to retaliate if the product does not meet expectations. However, this solution is not always feasible. In a market with few competitors such as the Internet service providing industry, many Americans have a limited number of providers to choose from, and bad service cannot be easily punished from the consumer's perspective. Akerlof also mentions that over time, there exists an incentive to market lower quality goods because blame is placed on the group and not the individual. Thus, when a small number of companies in an industry work against the consumer by deliberately obsolescing their products, the overall perception of the group is damaged.



Another consequence of information asymmetry is that manufacturers that set artificial expiration dates on their goods can engage in price discrimination. Early buyers are often charged more money for a product than late buyers are. For example, Apple releases new models of the iPhone each year, which often come with improvements or additional features not available in the previous model. Following the release of the iPhone 4, Apple initially charged customers \$500-600 for the phone, but the price dropped to \$300 a year later after the company announced the release of the iPhone 4S (Keeble et al., 2013). When companies like Apple obsolesce their products frequently, early buyers, who are convinced to purchase the latest release, are exploited the most.

Legal implications are also concerns faced by firms that engage in planned obsolescence. As discussed in the previous section, planned obsolescence is most viable when the manufacturer owns a monopoly or is part of an oligopoly. These market structures are usually the subject of antitrust scrutiny. However, it has been difficult to prove in court that the planned obsolescence strategies used by suspected companies are truly exclusionary (Orbach, 2004). Since antitrust laws do not examine the wisdom of consumers' choices, and gradual product improvements do not exclude competition, many corporations are acquitted in these trials. These verdicts are problematic because customers who were cheated by these companies may be displeased that the perpetrators had gone unpunished.

### **Utilitarian Analysis**

This section will evaluate the ethicality of planned obsolescence in technology by considering several cases and their consequences on society's overall utility. Since estimating the costs of all aspects of planned obsolescence is extremely tedious and complex, a more rule-based

approach will be taken instead. That is, what will be the consequences if all corporations practice planned obsolescence whenever the situation is convenient?

In a capitalistic society, competitors may enter the market. If an existing manufacturer purposely limits the lifespan of a product, the competitor can release a more durable product at a lower cost. Manufacturers will then be compelled to improve product quality and lower costs in order to remain competitive in the market. These decisions, one may argue, will spur innovation in the process. In terms of economic effects, consumers will spend money that would have otherwise remained stagnant. Companies will also be able to profit, and the circulation of money will ultimately benefit the economy. The quality of life will improve for consumers, who now have new, upgraded versions of the product. The end result is that the utility will be much higher for both the consumer and the producer under planned obsolescence.

When profitability is the foremost concern, planned obsolescence appears to be the more attractive plan. However, this analysis will be incomplete if the discussion of negative consequences is omitted. In his book *The Waste Makers*, Vance Packard (1960) acknowledges that American society is particularly susceptible to advertising. That Americans are prone to mass consumerism is undeniable. What Packard saw as the growing materialism of the time was slowly transforming Americans into “voracious, wasteful, compulsive consumers” (p. 72). When companies exploit this hypermaterialistic behavior, excessive waste is created from shaping consumer attitudes.

In fact, planned obsolescence in technology does indeed create waste. When consumers dispose of their used and outdated electronics, dangerous amounts of e-waste accumulate in the environment. Even though e-waste accounts for only .01-3% of total world waste, it is the fastest growing type of waste in many developing countries (Martin & Harris, 2014). This is particularly

alarming considering that the United States, a nation notorious for its mass consumerism, annually ships 50-80% of its domestic e-waste to countries, such as India and China. Disposed electronics and appliances that are transported to these Asian countries contain an excess of heavy metals like lead, mercury, chromium, and selenium (Widmer et al., 2005). This practice poses a challenging storage problem for e-waste, which leads to serious repercussions like heavy environmental pollution. In some cities in China, the dumping of e-waste has rendered water undrinkable for hundreds of thousands of people. From the rule-utilitarian perspective, this problem becomes more significant if all companies decide to obsolesce their products. As the rate of planned obsolescence increases, so will the rate of product disposal and the accumulation of e-waste. In the short term, the additional revenue gained from faster replacement of products and repetitive consumption may benefit the economy. However, the long-term effects of widespread planned obsolescence are jarringly unpleasant and environmentally unsustainable. Rapid innovation and prosperity are both favorable outcomes from an economic standpoint, but should they come at the cost of greatly diminishing the livelihoods of untold millions in developing countries? If not, then perhaps society should reevaluate its position on planned obsolescence.

### **Kantian Analysis**

Kant's first formulation of the categorical imperative asks whether the rule in question can be upheld if universalized. In the case of planned obsolescence, the maxim that will be tested is "Companies are permitted to manipulate consumer behavior." This statement implies that in certain cases, companies are allowed to act dishonestly because they want to convince consumers to replace goods already obsolete. However, if everyone in society were dishonest, daily life

would become problematic. According to Kant, if everyone lied to each other, it would be impossible to discover truth. Thus, people's statuses as rational, human beings would be wholly undermined. This sequence of events results in a logical contradiction.

The second formulation of the categorical imperative states that human beings should be treated as ends, never as a means to an end. In the free market, some companies exist solely to make a profit from repetitive consumption. If these companies are deliberately obsolescing consumer products to increase demand, they are, in effect, treating consumers as means to an end. Both formulations of the categorical imperative clearly determine the moral ruling on this issue. A Kantian analysis would therefore conclude that planned obsolescence in technology is inherently unethical.

## **Conclusion**

Since its inception in the 1920s, planned obsolescence is an evolving concept. Originally proposed to address the problem of overproduction and inadequate consumption during the Great Depression, this practice, in modern times, has become increasingly reliant on America's propensity to consume. Firms that engage in planned obsolescence purposely shorten the lifespans of their products to drive repetitive consumption. While some argue that planned obsolescence, in reasonable amounts, is necessary for innovation and economic prosperity, opponents contend that the practice is not only detrimental to the environment but also inherently deceitful to consumers. The economic analysis presented in this paper may support either side of the argument, but the ethical theories of Kantianism and utilitarianism lean more toward the idea that planned obsolescence in technology is unethical and should be forbidden. Under Kant's ethical framework, the categorical imperative absolutely prohibits planned obsolescence.

However, the results from the utilitarian analysis are somewhat unclear. If the societal costs outweigh the economic benefits, then companies should definitely forgo the practice of obsolescing their goods. But if that were not the case, then perhaps one may argue for the continuation of planned obsolescence in technology. Since the potential economic consequences of planned obsolescence mentioned in this paper are not easily measurable, a more rigorous approach must be applied. In order to establish any cause-and-effect relationship, future research into the effect planned obsolescence has on market innovation and the global environment would be required.

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